AILWAY

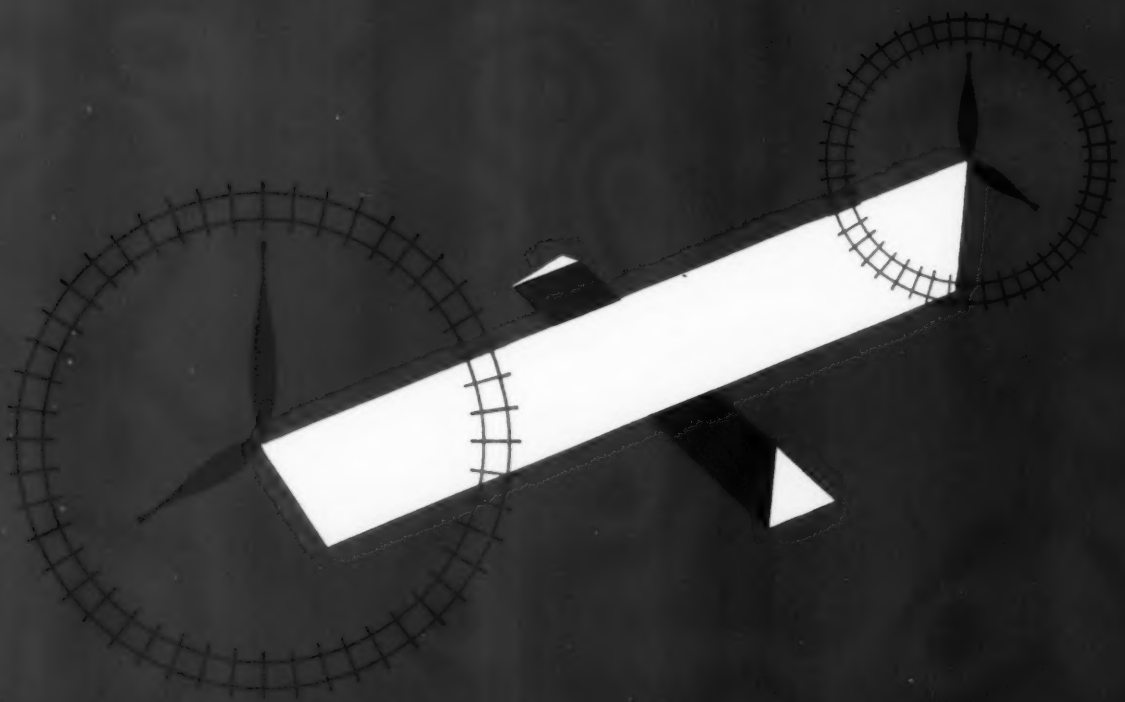
TRACK and STRUCTURES

January 1955

One of Five Specialized Railway Age Publications

FORMERLY
Railway Engineering and Maintenance

Let Reliance HY-CROME® *Spring Washers help you*



increase time between Track Joint Maintenance Periods

Lengthening the time between periodic tightening of rail joint bolts reduces the cost of maintaining track.

Reliance Hy-Crome Spring Washers are a product of the combined engineering experience of Eaton-Reliance fastening engineers, railroad track engineers and modern manufacturing methods.

To keep track joints tighter longer, a spring washer with adequate non-fatiguing reactive pressures had to be developed. Reliance Xtra-hy Hy-Crome Spring Washers were specifically developed to meet and exceed the 1948 A. R. E. A. Specifications.

Manufactured from special alloy spring steel of correctly engineered section sizes, their inherent reactive pressure over a wide reactive range is able to automatically compensate for developed looseness in the rail joint assembly and to keep it **tighter longer.**

A trial will convince you. Write now for Reliance Hy-Crome Spring Washer Folder R53.

"SPRINGTITE" AND "HOZ-FAS-NER" ARE REGISTERED TRADEMARKS OF THE EATON MANUFACTURING COMPANY

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Special Steels Spring Lock Washers Hoz-Fas-Ners

Published monthly by Simmons-Boardman Publishing Corporation, Emmett Street, Bristol, Connecticut, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $2.00; $3.00 for two years. Single copy 50 cents. Entered as second class matter at the Post Office at Bristol, Conn., November 26, 1954, under act of March 3, 1879. Volume 51, No. 1.

Where hand scalping costs are too high!

Effectively Stop Weeds *this low-cost thrifty way!*

SAVE Up to 85% of your grassing costs!
Put Concentrated Borascu Weed Killer about your timber structures, yards, tie piles, sidings and buildings to get greatest protection from brush fires at lowest cost! Weeds-grasses are stopped, leaving nothing but bare ground wherever Concentrated Borascu is applied properly. Don't sacrifice your costly man-power on grassing... this modern method is thriftier!

When Borascu's in... weeds stay out!
Weeds and grasses just *can't* grow on soil where Borascu has been applied! And such soil remains sterile for long periods because this inorganic borate doesn't break down. Applications are simple; there is nothing to mix . . . no water to haul and the most unskilled laborer can do the job. You'll find it pays to use Concentrated Borascu.

Saves you Dollars!

Kills Weeds for Pennies!

PACIFIC COAST BORAX CO.
DIVISION OF BORAX CONSOLIDATED, LIMITED
630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

STEP UP OUTPUT with this versatile 1 yd.

MODEL 41

HERE IS A *REAL* 1 YD. MACHINE—built from the ground up as a 1 yd. machine able to deliver what you expect from a 1 yd. machine.

The Model 41 Northwest brings you the ability and capacity for greater output yet it does all the other things that a railroad man wants a rig to do.

It brings you positive traction on both crawlers while turning as well as when going straight ahead. It will load and unload under its own power on one standard flatcar and it will travel from car to car over flats or through drop end gondolas. It brings you Uniform Pressure Swing Clutches that take the grabs and jerks out of swinging. The "Feather-Touch" Clutch Control gives ease of operation without the complications of delicate pumps or compressors. Your Northwest won't be shut down by control failure.

It works along the line or travels miles through back country with equal ease. It crosses tracks without delays and, of course, it's convertible to a standard Crane for magnet, pile driver, hook block, clamshell and other crane work or you can equip it as a Dragline or Pullshovel for ditching or trimming.

Find out about this proved 1 yd. Northwest. Let a Northwest man give you the full story.

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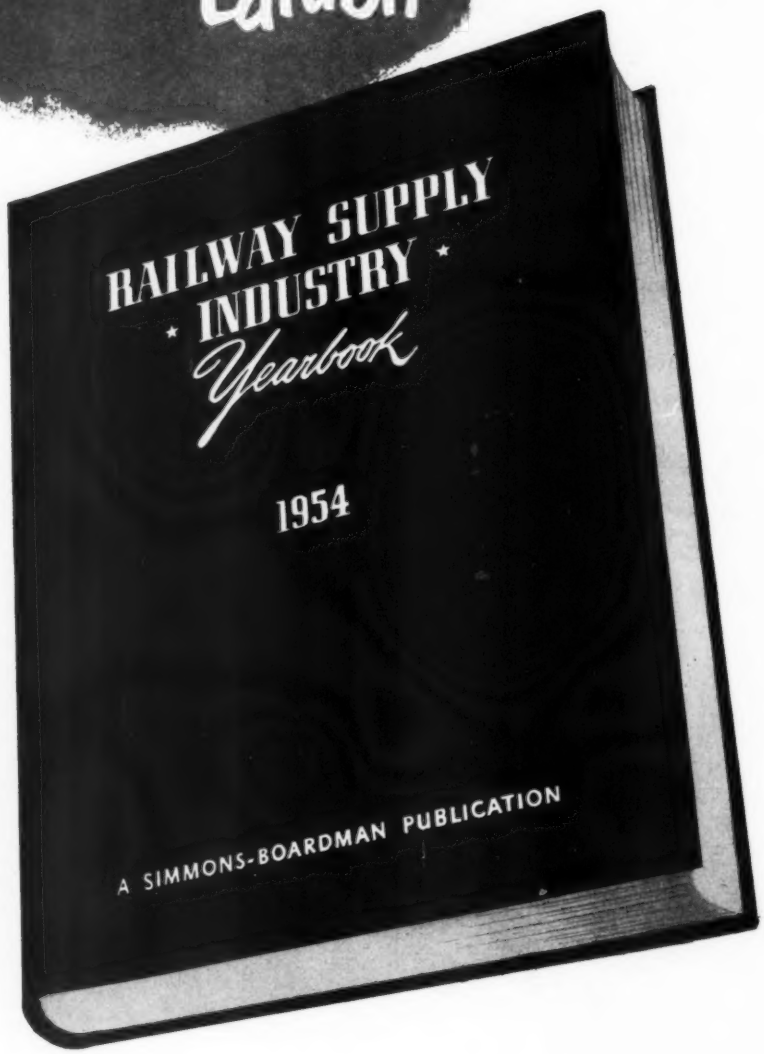
NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
SHOVEL • CRANE • DRAGLINE • PULLSHOVEL

DOES THINGS NO TRACK-TYPE RIG CAN DO

JUST OUT... 1954 Edition

More than



Replies to a recent mail survey, from 42 railroads representing a large majority of the buying power of the entire railway industry, showed that 96% of users refer to the *Railway Supply Industry Yearbook* for specific buying purposes.

In 4 Main Sections . . .

a. *"Who's Who" Section* lists railway supply companies, their main and district offices, and names of important executive and sales personnel.

b. Manufacturers' *Catalog Section.*

c. Classified *Product Directory Section.*

d. *Index of Trade Names.*

When railway men are planning to buy, they refer to the R.S.I. Yearbook with confidence

5,000 copies now being distributed

126 Manufacturers and Suppliers to the Railway Industry Provide Individual Catalogs in the Advertising Pages

The best endorsement of this perennial reference volume is the continuing large number of manufacturers and suppliers to the railroad industry who have placed their advertisements and catalog-type messages in the pages of the 1954 *Railway Supply Industry Yearbook*. They know that with the day-in-and-day-out use of this, the only reference volume of its kind in this field, their sales messages within its pages will receive repeated reader recognition as the book is referred to with reliability.

When your railroad is about to make a purchase, be sure to refer to this '54 *Yearbook*. Manufacturers who advertise in it offer you their "silent salesman," ready to answer your product questions each time the book is opened. As indicated by replies to a recent mail survey from 42 railroads, 96% of *Railway Supply Industry Yearbook* users refer to it for *specific* buying purposes.

The 126 manufacturers and suppliers whose catalogs appear in the advertising pages represent every type of manufactured item used by railroads and allied fields. They are companies of varying sizes and years of service . . . some brand new to the field and many long-time manufacturers . . . all of whom consider the *Railway Supply Industry Yearbook* a worthwhile and an ideal medium to aid railway buyers with catalog and display type advertisements describing their products and services.

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CHICAGO • CLEVELAND • LOS ANGELES • DALLAS • PORTLAND, OREGON • SAN FRANCISCO • WASHINGTON, D. C. • CORAL GABLES, FLA.

Weed and Brush Control lasts longer with Du Pont TELVAR® and AMMATE®

Weed Killers *Weed and Brush Killer*

"Telvar" has kept this yard clean of vegetation for two years.

Track at right was treated with "Telvar" Weed Killer. "Telvar" won't corrode equipment; it's non-flammable, non-volatile.

Area treated with "Telvar," left; untreated, right. "Telvar" is easily applied, extremely low in toxicity to humans and animals.

One application of "Telvar" solves weed problems for a season or longer!

"Telvar" kills through the roots . . . prevents regrowth. Low dosages (20 to 80 lbs. per acre) make it cost little for the results you obtain. Low rates also mean less handling, less storage facilities. If you're looking for a way to cut maintenance costs to new low levels, include "Telvar" in your weed-control program. Available in two formulations: "Telvar" W; and "Telvar" DW, which is especially suited for light, sandy soils and in areas where annual rainfall is higher than 20 inches.

"Ammate" kills more kinds of brush and keeps it down longer than most weed and brush killers!

When the original spray job is well done, brush is kept under control with nothing more than an occasional spot spray later. You can rely on "Ammate" to do the job safely, even where your rights-of-way adjoin crop land, because "Ammate" is not volatile. There are no vapors to drift onto sensitive crops.

FREE ILLUSTRATED BOOKLETS describe how to control weeds and brush with Du Pont chemicals. For your copies, write to Du Pont, Grasselli Chemicals Dept., Rm. D-4032, Wilmington, Del. In Canada—Du Pont Company of Canada Limited, Box 660, Montreal.

TELVAR® AMMATE®

Weed Killers *Weed and Brush Killer*

On all chemicals always follow directions for application. Where warning or caution statements on use of product are given, read them carefully.

DU PONT

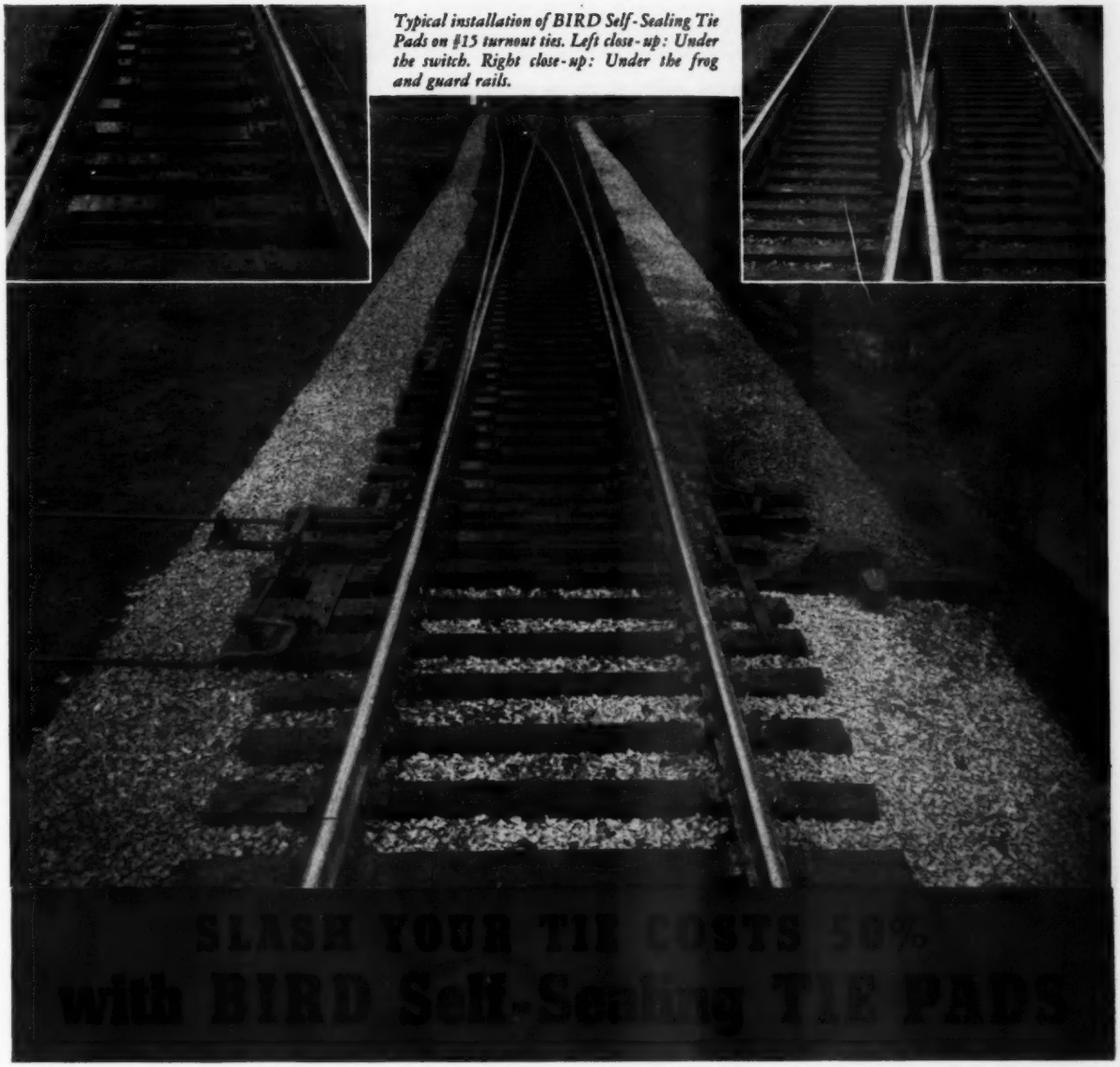
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Brush along right-of-way was controlled with "Ammate."

Maintenance crews prefer "Ammate" because they can use it without hazard to themselves, livestock, wildlife or adjoining crops.

Same right-of-way as above, three years after treatment. Brush still under control; low-growing cover returned to resist erosion.



Typical installation of BIRD Self-Sealing Tie Pads on #15 turnout ties. Left close-up: Under the switch. Right close-up: Under the frog and guard rails.

SLASH YOUR TIE COSTS 50% with BIRD Self-Sealing TIE PADS

HOW? BIRD Self-Sealing Tie Pads form a waterproof, dustproof seal on the tie that protects the vulnerable area under the plates and around the spikes. Mechanical wear and plate penetration are eliminated.

YOU GET 50% or more extra tie life from new ties and timbers.

YOU GET twice the normal remaining life expectancy from old ties that can be adzed to a smooth surface of sound wood.

YOU SAVE on gauge, line, and surface costs in addition to savings on tie life.

BIRD PROVEN BEST! The original self-sealing tie pad – proven by years of in-track experience.

WHERE?

1. On the joint and shoulder ties of insulated joints.
2. On new or older bridge decks.
3. On switch timbers.
4. Under crossing frogs.
5. Through highway grade crossings and station platforms.
6. On curves to insure holding track to gauge and surface.
7. With smaller tie plates.
8. On pile cutoffs.

WHEN? Start now. Write today to BIRD Tie Pads, Dept. HTS-1, East Walpole, Massachusetts.

BUY THE BEST **BIRD & SON, inc.** Established 1795 ***BUY BIRD***

YOU NEED BOTH . . .

ECONOMICAL *Proven* WEED AND BRUSH KILLING SERVICES

Chemical treatment of your *whole* roadway makes good sense—and saves maintenance dollars. Bogle experience has been extensive in both "roadbed" and "right-of-way" applications. We have the right kind of chemical for every job and the know-how that only 30 years plus in the business can give.

Add to this a fleet of fully-equipped, modern spray cars and experienced operating personnel and you have our prescription for a complete, well-integrated weed and brush killing service that meets today's needs at the lowest possible cost per mile.

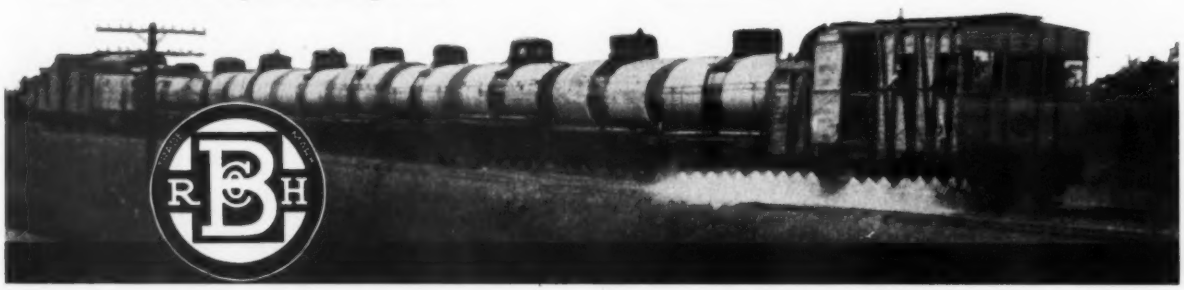
We shall gladly work out a Bogle program with you in the light of your own needs.

THE R. H. BOGLE CO.

ALEXANDRIA, VA.

Memphis, Tenn.

Complete Weed and Brush Killing Service



Scarifies a 10 foot tie bed in less than a minute... *rolls on TIMKEN® bearings*

LOOSENING and digging a tie bed 10′ 3″ long, the Fairmont W87 Series A Tie Bed Scarifier can hit an average speed of one tie bed a minute. And with only one operator!

To keep maintenance low, the wheels of this 5,000-pound machine are mounted on double-row Timken® tapered roller bearings. This practically eliminates friction. The tapered design of Timken bearings is geometrically correct to produce true rolling motion. And their precision manufacture helps them live up to their design.

Design of axle housings is simplified, since no provision need be made for special devices to take thrust loads set up by curves. The tapered design of Timken bearings lets them take both radial and thrust loads in any combination.

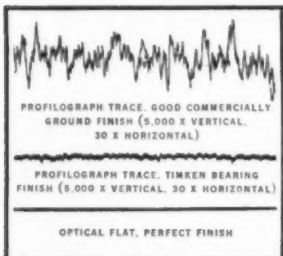
Since no bearing, however well made, can ever be any better than the steel that goes into it, we make our own. No other U. S. bearing maker has this start-to-finish control of bearing quality.

These are some of the reasons why, in terms of performance and long life, Timken bearings are the lowest-cost bearings that can be put on a machine.

Whether you build or buy machines, specify the bearings with the trademark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

FAIRMONT RAILWAY MOTORS INC. mounts the wheels of this tie bed scarifier on Timken bearings for long life, low maintenance, least friction.



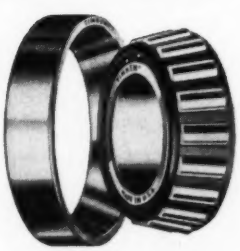
SMOOTH TO MILLIONTHS OF AN INCH

Surface finish of high quality Timken bearing rollers and races is so smooth that it takes a profilograph to measure its smoothness. This instrument measures surface variations to a millionth of an inch, as shown at the left.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION →✣←

One Standard of Quality

DEMOUNTABLE STEEL WHEELS FOR EVERY TRACK CAR

Every Fairbanks-Morse demountable steel wheel conforms to one standard of quality — the highest!

Every step from sheet steel purchase to finished wheel is under Fairbanks-Morse control and inspection. Every wheel is cold-formed in our own plant, on our own presses using our own modern dies . . . machined and finished to a design of simplicity and strength.

This control of quality is your assurance that F-M wheels are the sturdiest track car wheels on the rails today!

When you need replacement wheels in 20", 16" or 14" sizes, standardize on quality . . . standardize on Fairbanks-Morse steel wheels for longer life. Fairbanks, Morse & Co., Chicago 5, Ill.

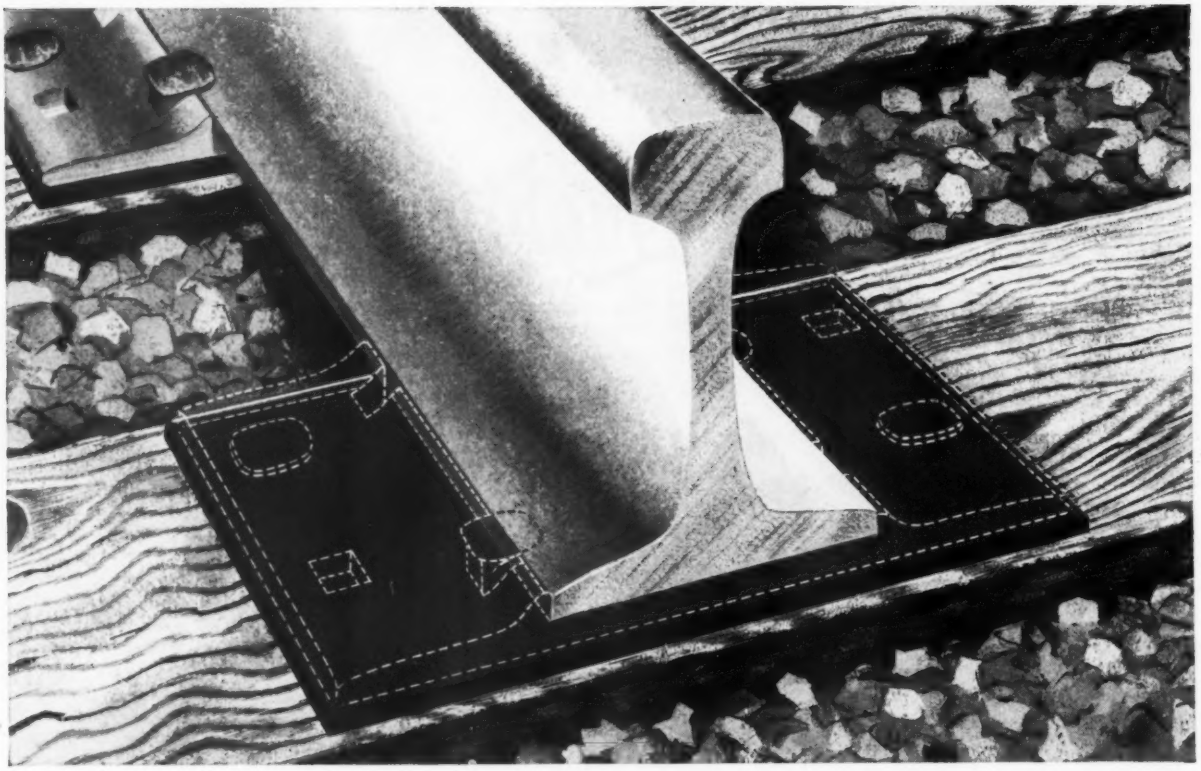
Conform strictly to A.R.E.A. standards

FAIRBANKS-MORSE

a name worth remembering when you want the best

RAIL CARS AND RAILROAD EQUIPMENT • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAMMER MILLS • MAGNETOS

How to keep ties from dying young in trouble spots



Prevent cutting and abrasion by cushioning track structures with Johns-Manville Tie Pads

Johns-Manville Tie Pads provide benefits that warrant consideration in every track program. Designed to prolong tie service life, these Pads reduce "pumping," help track spikes stay tight longer, postpone maintenance expense for regauging and respiking.

J-M Pads absorb impact shock, help isolate the transmission of noise and vibration. Resilient, they serve as durable protective cushions, seal out dirt and moisture, prevent abrasion and cutting.

Formulated for low compressibility, high recovery and low plastic flow, J-M Tie Pads offer good resiliency and flexibility over the widest temperature ranges encountered in service. They are resistant to creosote, diesel and lubricating oils, brine, water and freezing and thawing.

Available in all standard sizes, J-M Tie Pads are furnished plain, or with a special coating on one side. For detailed information on Tie Pads or other Johns-Manville products, get in touch with your J-M Representative, or write Johns-Manville, Box 60, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS **Johns-Manville** 96 YEARS OF SERVICE TO TRANSPORTATION

NORDBERG continues to set new standards for Modern Maintenance Machinery . . .

. . . here are 4 new "sets" of *Mechanical Muscles*® —all introduced within one year's time!

NEW TRAKLINER . . . A self-contained, self-propelled machine for fast, detailed lining of track. Think of the savings—two men and a machine doing the work of 14 men or more. Covered in Bulletin 230A.

NEW BALLAST ROUTER . . . Another efficient set of Mechanical Muscles for removing high ballast ahead of adzing in a rail renewal job. Covered in Bulletin 240.

NEW HYDRAULIC SPIKE PULLER . . . This modern Nordberg development is a simple, flexible machine for tie renewal work. Saves time and money as it pulls spikes on either rail, on any gauge track. Covered in Bulletin 227.

NEW TIE DRILL . . . Bores two holes at once—for rail spikes or anchor spikes. Adjustable to fit any tie plate, it drills through tie plate holes, for both tie renewal work and rail relaying operations. Covered in Bulletin 199.

These four new *Mechanical Muscles* typify the continuing research and development being made by Nordberg to provide the nation's railroads with modern track machinery to do a better, faster maintenance job at lower cost.

Designed, built, and proved in use with the cooperation of track maintenance men, this equipment has actually revolutionized maintenance methods in scores of operations.

It will pay you to investigate the full line of modern, money-saving Nordberg track maintenance machinery for meeting today's maintenance needs.

For further details on any or all of these Nordberg machines, write for literature.

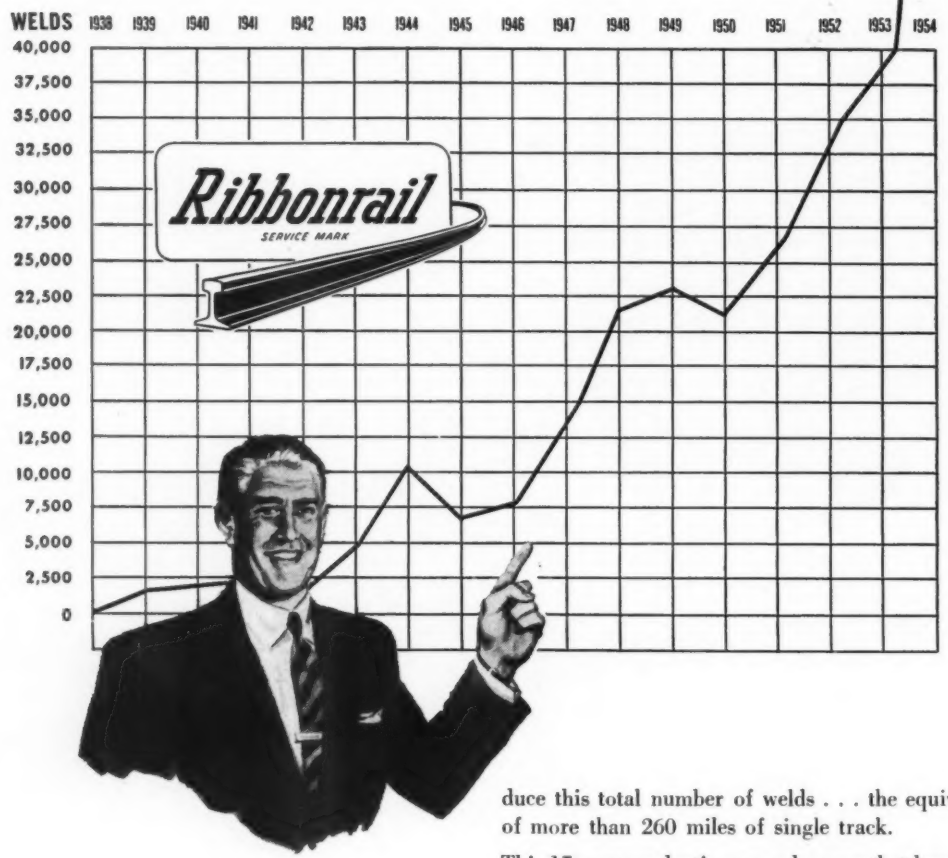
NORDBERG MFG. CO., Milwaukee, Wis.

NORDBERG

CONTINUOUS RAIL PRODUCTION IS HIGHBALLING

70,000 WELDS

MORE AND MORE RAILROADS ARE CLEARING THE WAY FOR SAVINGS IN TRACK MAINTENANCE



A record 70,000 welds in 1954! The growing acceptance of continuous rail has pushed the production curve right out of the chart shown you a few months ago. Last year, 19 major railroads used LINDE'S RIBBONRAIL service and equipment to produce this total number of welds . . . the equivalent of more than 260 miles of single track.

This 17 year production record means that hundreds of miles of trouble-free, economical, continuous rail are in track in all sections of the country. Now is the time to plan *your* future continuous rail program. Call or write the Railroad Department of Linde Air Products Company.

RAILROAD DEPARTMENT

Linde Air Products Company

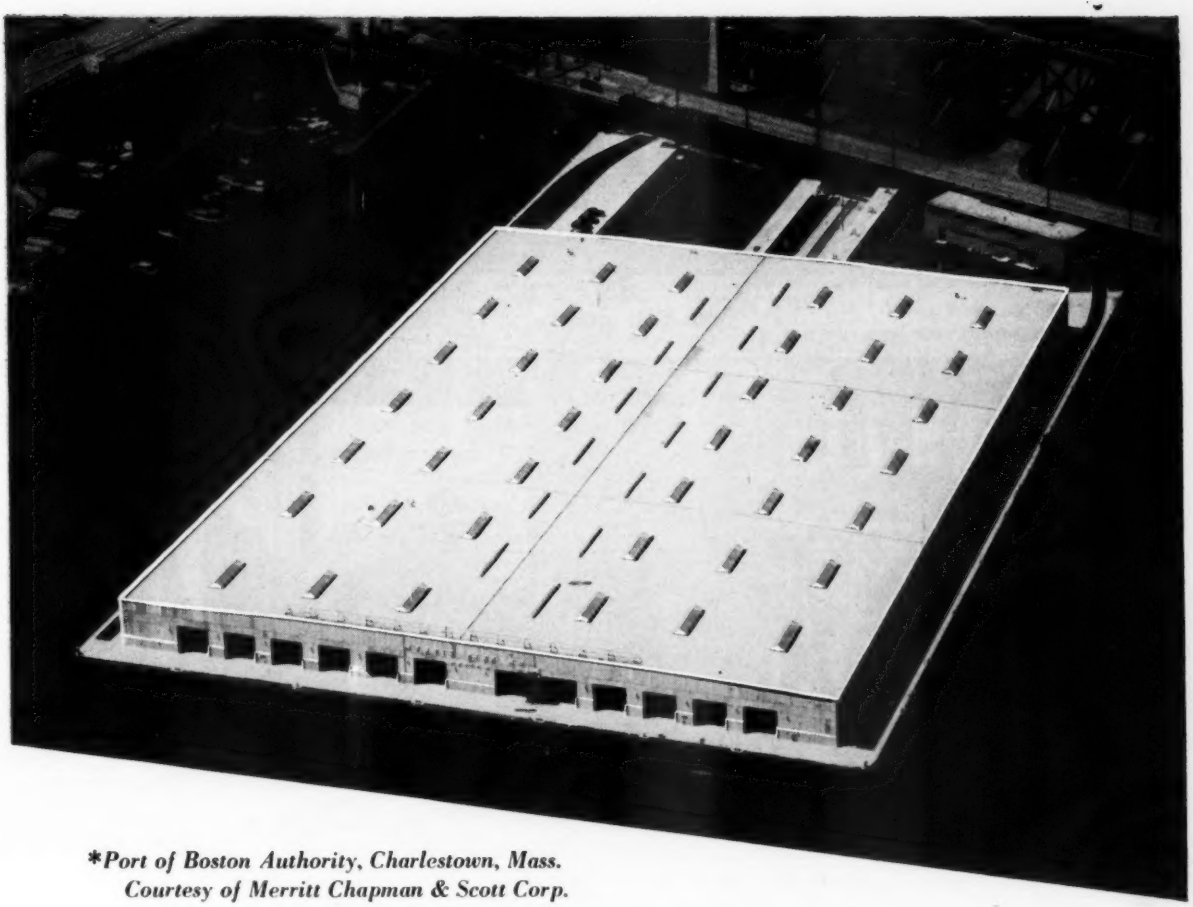
A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY
Division of Union Carbide Canada Limited, Toronto

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -

"Linde" and "Oxweld" are trade-marks and "Ribbonrail" is a service mark of Union Carbide and Carbon Corporation.



*Port of Boston Authority, Charlestown, Mass.
Courtesy of Merritt Chapman & Scott Corp.*

DEPENDING ON REPUBLIC!

The all-important structural piles of this pier are southern yellow pine—pressure-creosoted by Republic Creosoting Company. Their life span has been increased many fold.

In either fresh or salt water, acid or alkaline soil, pressure-creosoted wood . . . telephone poles, anchor logs, cross arms, piles, railroad ties, wood blocks, or other Republic products . . . has stood the test of time.

For dependable, long life service, obtain your Creosoted wood products from Republic.

REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA

Republic
CREOSOTED PRODUCTS

News Notes

. . . a resumé of current events throughout the railroad world

RAILWAY
TRACK and STRUCTURES
JANUARY, 1955

The New York Central has installed a new fast daily through-freight service between Chicago and New York, which gives receivers of perishable freight an advantage over the road's best previous service. Two new trains, one designated by time-card symbol "CD-4," and the other "NY-4," have been added in this service. Both trains stop only to change crews and to ice their refrigerator cars. Shortly before this issue went to press, two additional trains, designated "BF-NY-4" and "CB-4," between Bellefontaine, Ohio, Cleveland and New York, and Chicago and Buffalo, respectively, went into operation—offering similar expedited service.

•

Five of the railroads most directly affected by the extension of the three-cent-by-air-mail experiment to the west coast have filed suit to enjoin the Postmaster General from proceeding with this program. The roads challenged the legality of the experiment on the grounds that the distinction between air mail and other mail, including first class, is not preserved.

•

The Norfolk & Western's experimental steam turbine locomotive has made a "splendid showing" in its preliminary tests, according to N&W President, R. H. Smith. Mr. Smith reports that the locomotive's high thermal efficiency and its low fuel cost per unit of traffic are particularly gratifying.

•

A recommendation that the Pullman conductors' wage dispute be settled on the basis of the pattern set in cases involving railroad operating employees and other train service employees has been submitted to President Eisenhower by an emergency board created to arbitrate the dispute.

•

The Chesapeake & Ohio has rejoined the Association of American Railroads as a full-fledged member, a status that it has not occupied since 1946 when, under the chairmanship of Robert R. Young, it withdrew from participation in industry policy, legal, public relations and advertising activities of the Association.

•

A new and original control feature on the Richmond, Fredericksburg & Potomac permits highway crossing gates to open to allow vehicles to pass if a train stops on the approach circuit; then, when the engineer blows his whistle or presses a button in the locomotive cab, the gates are again lowered automatically.

•

A new system of lubricating freight-car journals has been developed, which is said to reduce oil consumption by 90 per cent, extend bearing and axle life and eliminate causes of more than 80 per cent of all hot boxes. The system, developed by the National Motor Bearing Company, has been given official approval by the AAR for installation on an initial 10,000 cars in interchange service. The new equipment will reportedly cost the railroads under $200 per car, and some of the devices making up the system are expected to last the lifetime of a car.

•

A state may not ban a trucker from its highways, when he is engaged in interstate commerce, as a penalty for violation of state laws, according to a recent ruling of the United States Supreme Court. The ruling ends a court battle which began when the state of Illinois sought to suspend operating rights of the Hayes Freight Line, charging it with 157 overloading violations.

"These weeds tickle, George . . . next time let's ride a railroad that uses Chipman weed killers."

Chipman Chemical Company weed killers and application service are backed by over 40 years of experience in serving railroads. An extensive line of weed, grass and brush killing chemicals is available to meet varying conditions. Included are the following:

Atlacide Liquid	Methoxone-Chlorax
Atlacide Spray Powder	Atlas "A" Arsenical
Chlorax Liquid	Atlas Contact
Chlorax "40"	Brush Killer
TCA-Chlorax	Borax • CMU • Dalapon

Let us solve *your* weed problems with the *right* chemicals and application service.

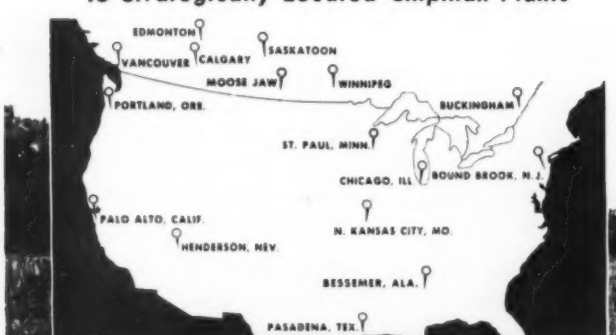
CHIPMAN

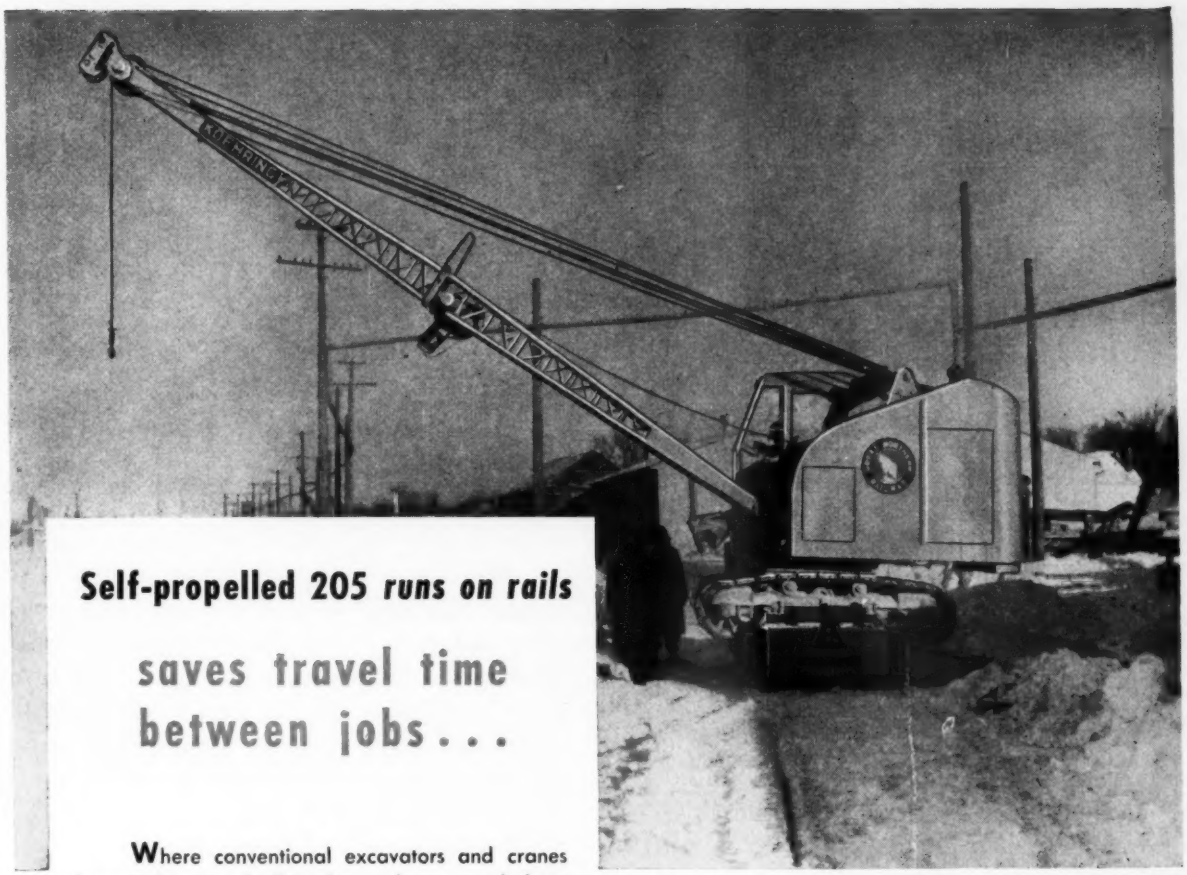
Chemical Company, Inc.

Railroad Div. Headquarters: 608 So. Dearborn St., Chicago 5

Executive Offices: Bound Brook, New Jersey

16 Strategically Located Chipman Plants





Self-propelled 205 *runs on rails*

saves travel time between jobs . . .

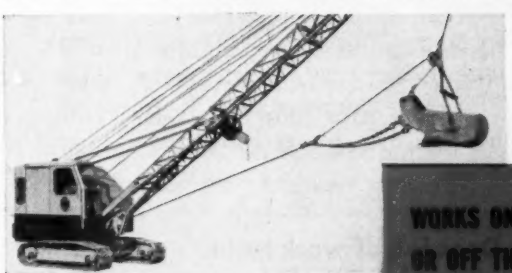
Where conventional excavators and cranes have to be moved off-track over long, round-about routes from one job to the next, the Koehring 205 takes to the rails. RailAid powers its own rail-propulsion car . . . travels on-track at speeds up to 20 m.p.h.

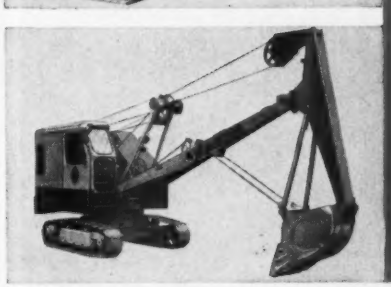
You can send it anywhere along the line, at a moment's notice, to do any digging, lifting or material-handling jobs: cleans ditches, widens embankments . . . loads, unloads cars, stockpiles ballast, coal . . . repairs trestles, drives piles, lays rails . . . handles scrap or salvage.

Because all travel is by rail, crawler life is considerably increased. Yet, you have complete flexibility for working on or off-track.

Clears the track in 10 minutes

Crane loads or unloads itself on ramp-equipped car in less than 10 minutes. Sets car on or off-track . . . clears the right-of-way for normal through traffic. Work of RailAid and crew is uninterrupted during entire shift. Crane safely lifts 6.9 tons from the car, 8.9 tons on ground . . . readily converts to magnet crane, pile driver, clamshell, dragline, ½-yard shovel or hoe. Learn more about this versatile on-and-off-track RailAid . . . write: Koehring Co., Milwaukee 16, Wisconsin.





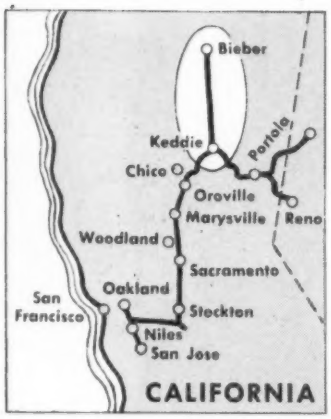
WORKS ON OR OFF THE PROPULSION CAR WITH ALL STANDARD ATTACHMENTS:

lift crane
magnet crane
pile driver
clamshell
dragline
shovel
hoe

KOEHRING (KOEHRING HEAVY DUTY) ***RailAid®***

(Subsidiaries: **KWIK-MIX • PARSONS • JOHNSON)**

How the Western Pacific
cuts delays from slides in the mountains



Western Pacific Railroad Company, San Francisco, Calif., operates 1,528 miles of road in California, Nevada and Utah. This includes a 110-mile secondary main-line from Keddie, Calif., to Bieber which provides, through its connection with the Great Northern, a route to the Pacific Northwest known as the "Inside Gateway."

Because much of the line is benched-in on the side of the mountains, it is subject to earth slides during the rainy season and snow slides in winter. For fast emergency slide-clearing service one of the units they have depended on since 1949 has been a 19 mph rubber-tired Tournatractor. This tool is ideal for their purposes since it can drive to the job under its own power and work in very restricted quarters.

Does job of work train

On the job pictured here, Tournatractor was working with a Manitowoc shovel and a small scaling crew trimming a large earth movement which threatened the tracks between Keddie and Moccasin Station. First, a fill of earth or gravel is laid between the rails to protect the roadbed. The slide is then blasted into small fragments which the tractor and shovel remove and drop into the valley below.

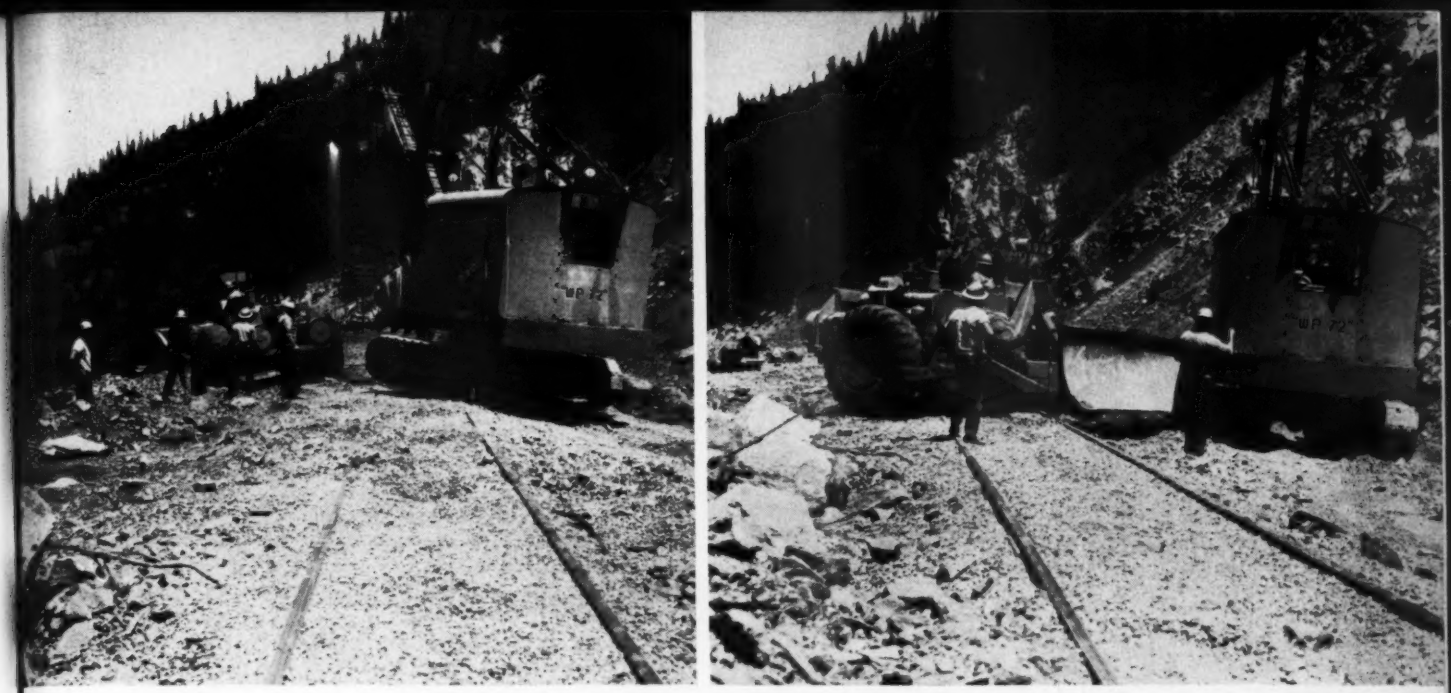
Prior to adopting "off-track" operation and the purchase of necessary equipment to effect this change, the railroad used a fully-equipped work train and crew to handle slide clearing jobs. It often took 2 hours time just to get the work train onto the main-line. Further time was lost travelling to the site. Train schedules were delayed. Because the line is mainly single track, no traffic could go through until the work train pulled into a siding, which might be several miles away.

Drives on roadbed to next job

Tournatractor, on the other hand, if within a reasonable distance, drives to a slide under its own power and is at work on the job within as little as 30 minutes after slide occurs. Straddling the rails, Tournatractor drives over bridges and trestles, through tunnels. As soon as a slide is cleared from the rails, revenue traffic can roll with little or no interruption to Tournatractor's work. Big rubber tires do not loosen rails or chamfer ties.

Running on rubber at speeds to 19 mph, Tournatractor has three times the speed of a comparable crawler-tractor. In addition, it can travel along the ties, or cross tracks, without planking.

By angling Angledozer blade to the right, Tournatractor operator is able to windrow blasted rock. For ditching or shaping slopes, either corner of blade can be raised or lowered.



When shovel became disabled, 186 hp Tournatractor pulled the excavator away from the danger of slides. To turn shovel-crawlers in direction of travel, Tournatractor operator nudged them around with dozer blade.

Foreman Jack H. Jones states that nothing but a rubber-tired tractor could work where Tournatractor does. "We can drive Tournatractor any place it's needed on this railroad," he says.

Railroad owners like Tournatractor because it doesn't interfere with train schedules, gets to the job sooner, and completes it faster. Besides it saves money . . . on the Western Pacific, Tournatractor and scaling crew can work for several days for a total cost of less than the expense of calling out a work train for one day.

Because of this saving in money and time, the Western Pacific bought another Tournatractor in 1951. This second unit usually works on the mainline in the famous Feather River Canyon. Both machines have been down for servicing and repairs less than 5% of scheduled working time.

Write for details

Tournatractor is a dependable product of the earth-moving subsidiary of Westinghouse Air Brake Company. Ask us for all the facts so you can compare this rubber-tired tool with your present off-track equipment. It can make important savings in time and money on your line!

Angledozer — Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark T-701-RR

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Tournatractor pushed several tons of rock over the bank. Says Operator Allen LeCone, "For clearing a slide on a railroad in a hurry, this Tournatractor can't be beat."

T-701-RR

FREE...

"The Railroad Handyman"

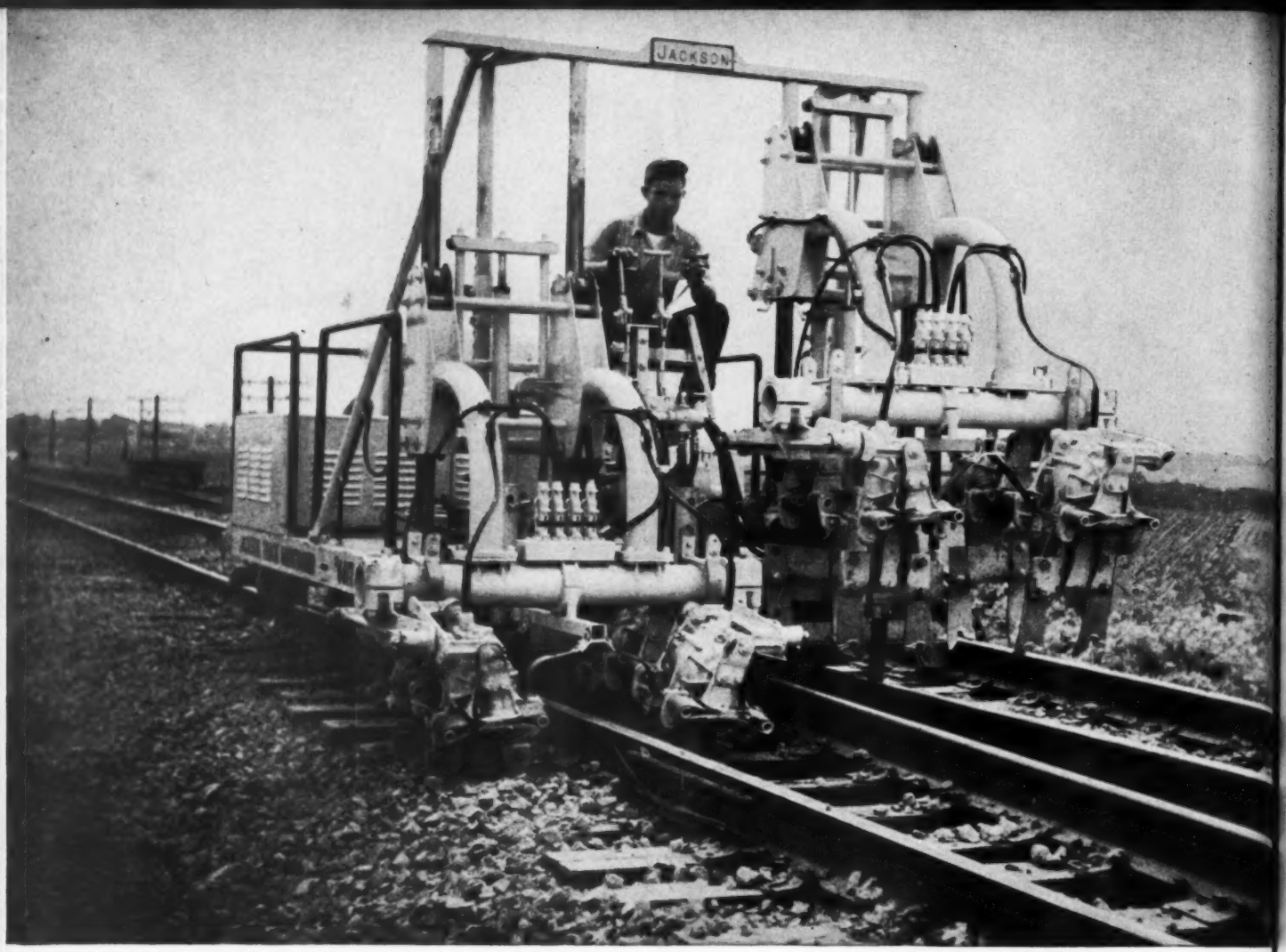
20-page book shows how the 7-yd. self-loading D Tournapull cuts time and costs on right-of-way maintenance. Send coupon for your free copy. No obligation. Also ask to see our color movie, "Clear the Track."

Name ..... Title .....

Division .....

Railroad .....

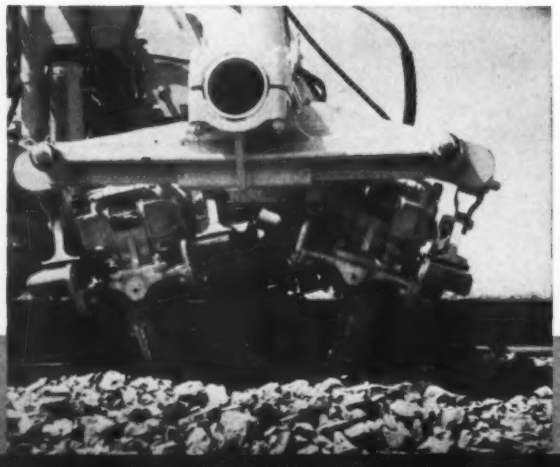
Address .....



FOR BOTH BUILDING AND MAINTAINING FINEST TRACK AT LOWEST COST

JACKSON TRACK MAINTAINER

No other machine comes close to rivaling the JACKSON TRACK MAINTAINER's ability to handle ALL tamping jobs with topnotch efficiency — regardless of conditions involved. Careful investigation, we believe, is bound to convince you that, judged from any angle, this is THE machine for the over-all job of both putting up and maintaining track of highest quality. Write for descriptive folder. Wire or phone for the answers to any specific questions you may have.



Any kind and size of ballast is uniformly and firmly tamped in any lift, and in spotting and smoothing. The bars go way down and compact a perfect base for the tie that stays put.

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

346-ton load

PROOF

that Armco Culverts will carry your heaviest load

Under only 3½ feet of cover, this 72-inch diameter Armco Corrugated Metal Pipe safely withstands one of the heaviest wheel loads on record. Several times a day since 1927, a 346-ton steel thermos car charged with molten metal, rolls over the pipe.

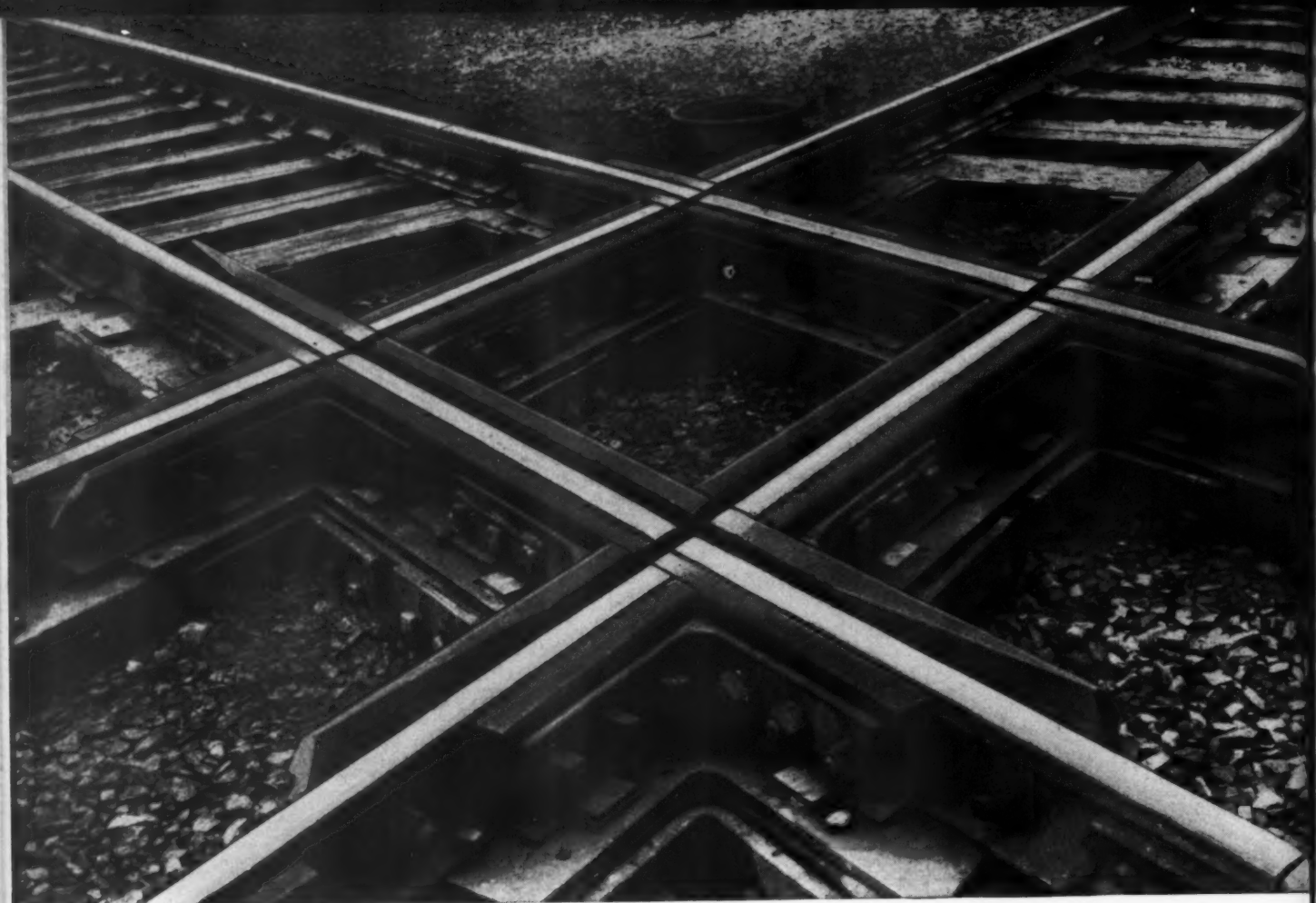
Today, the structure remains in excellent condition, with the promise of many more years of trouble-free service. Not one cent has been spent for maintenance since the structure was installed.

Flexible, corrugated metal design is one reason for the amazing strength and durability of Armco Structures. The load is distributed around the entire periphery of the pipe instead of being concentrated top and bottom as with rigid pipe. There's no danger of cracking or breaking.

To combat varying degrees of corrosion, protective coatings are available to assure ample material durability for every service condition. Plain galvanized pipe, like the structure pictured, is ideal for normal service. For severe corrosion, there is Armco ASBESTOS-BONDED. And where abrasive flow creates a problem, Armco PAVED-INVERT Pipe guards against erosion. Write us for complete information about durable Armco Drainage Structures. There is a size and type for almost every drainage need. Armco Drainage & Metal Products, Inc., 3595 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

ARMCO



U.S. Steel bolted heat-treated crossing, after one year's heavy-duty service.

IN JUST ONE YEAR . . .

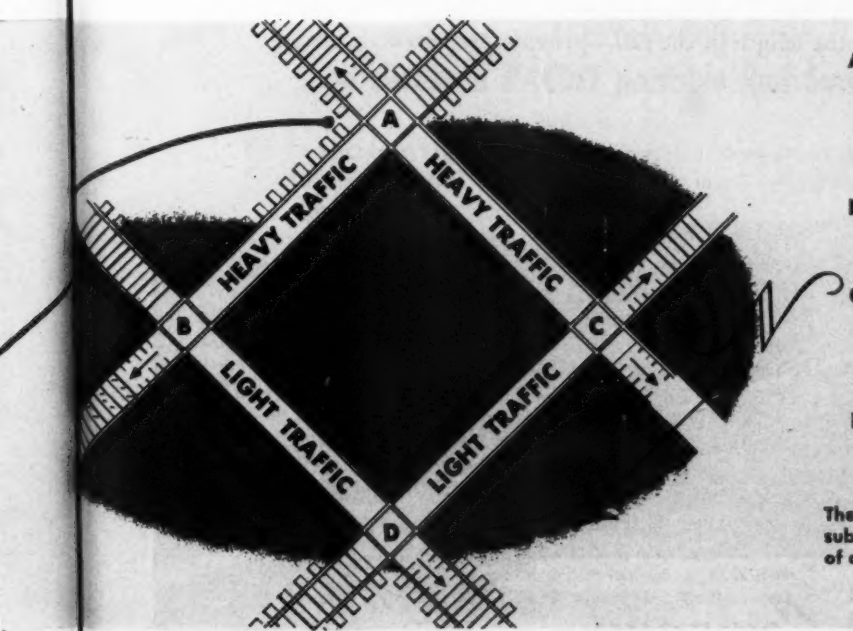
USS Heat-treated Crossing proves superiority over other crossings

THESE four crossings were installed at a major eastern railroad crossing in the Spring of 1953. Of the four, one was a U.S. Steel heat-treated bolted crossing and the others were of a competitive type and manufacture.

After one year of service, the crossings were carefully examined for wear. The USS heat-treated crossing—although it had been subjected to the heaviest traffic conditions (see diagram)—showed less wear than the other crossings.

The full heat treatment of rails, pioneered by U.S. Steel, not only increases their hardness and resistance to wear; it increases their strength, toughness, and resistance to impact. Moreover, these properties are imparted not only to the surface of the rail head, but to the entire rail including the web and the base. Such superior qualities provide longer life for trackwork, resulting in considerable savings to the railroad using the product.

For further information, write to United States Steel Corporation, 525 William Penn Place, Room 4538, Pittsburgh 30, Pennsylvania.



A. USS Heat-treated Crossing

1. South to North Traffic. Loaded coal trains. 35 MPH freights heavy in summer, light in winter, plus one local freight daily.
2. East to West and West to East. Two 70 MPH passenger and four 50 MPH freights daily. One local freight. (High speed traffic causes as much or more wear than heavy tonnage.)

B. Competitive Type Crossing

1. South to North Traffic. Same as crossing "A"-1, above.
2. East to West Traffic. Very light (siding traffic only).

C. Competitive Type Crossing

1. North to South traffic. Empty coal trains and one local freight daily.
2. East to West and West to East traffic. Same as crossing "A"-2, above.

D. Competitive Type Crossing

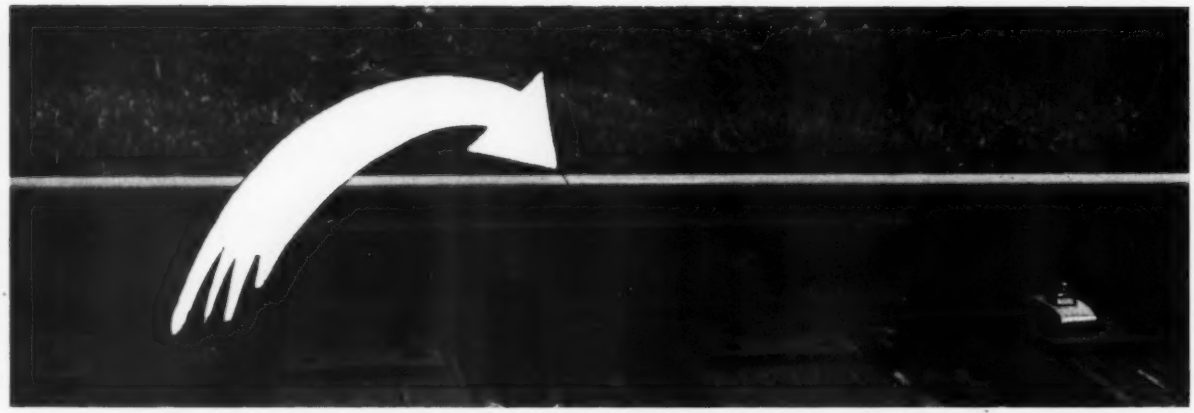
1. North to South traffic. Same as crossing "C"-1, above.
2. East to West traffic. Same as crossing "B"-2, above.

The combination of heavy freight and high-speed passenger trains subjects the USS heat-treated bolted crossing to the heaviest traffic of all described above.

USS

S STEEL

TRACKWORK



It's "TIGHT RAIL"

. . . ECONOMICAL – LOW IN MAINTENANCE

HOOT MON!

You're looking at "tight rail." This money-saving, smooth-riding construction has many important advantages and M/W men are using it successfully on a number of roads. It reduces rail-end batter and welding. "Low joints"—a major item of maintenance expense—are minimized.

COMPRESSION Rail Anchors, with their positive, uniform holding throughout the length of the rail—provide *preferred* anchoring for "tight rail."

The RAILS Company

RAILS Co.

Hoboken • Chicago • St. Louis

RAILWAY

TRACK and STRUCTURES

Subject:

No Ruts Here

Dear Readers:

Anyone whose life and interests are closely interwoven with the railroad maintenance-of-way field can hardly be in much danger of getting into a rut. Too much is happening. Changes—and I mean fundamental changes—in conditions and in practices, materials and equipment are almost a daily occurrence. These changes are not always to our liking but the net effect is in the direction of progress, and for that we should be thankful.

In fact, when you stop to think about it you can't help but conclude that the railroads as a whole have made phenomenal progress in various ways since the war. We all can remember some years back when there seemed to be much conversation about the "decadent" railroad industry. Maybe I haven't been in the right places, but I don't recall hearing any such comments lately. I doubt that they are being made anymore by well-informed people.

We don't need to look far for the answer. When the public once makes up its collective mind that such and such is so, nothing less than developments with the shattering force of an earthquake can bring about a change in attitude. The "earthquake" that did it in the railroad field was dieselization. Within the span of a few short years the railroads revolutionized their motive-power set-up in such a manner as to capture the public fancy. I suppose the effect was enhanced by the fact that many people thought the industry was too deeply embedded in tradition to bestir itself sufficiently to make such drastic and fundamental changes. Now the railroads are "on the beam" in the eyes of the public.

What the public generally doesn't realize is that dieselization is only one manifestation of the progressive spirit now motivating the railroad industry. If the average non-railroading citizen could be persuaded to delve behind the scenes he couldn't help but be amazed by such developments as the use of radio in train operation, the advances in yard design and operation, and the intelligent and aggressive manner in which the research tool is being used by the railroads. It is really unfortunate that more people don't use railroad passenger service, for then they would learn that the modern passenger train offers a degree of comfort, dependability and safety that is equalled by no other form of transportation.

But the real shock would come if the public could be brought face to face with the progress that has been made in the mechanization of M/W forces. The average person doubtless still pictures the section man, with shovel or pick in hand, as the backbone of the track forces. Does anyone question that this same person would react with intense interest if shown some of the track-maintenance devices that today are taken for granted by maintenance men?

But that's a little aside from my subject. I was saying at the outset that the rapidly changing nature of the field is insurance against trackmen getting into a rut. Certainly, there is more to it than this. Merely to be identified, either as editor or active participant, with a field in which developments are occurring so rapidly is both stimulating and a source of satisfaction.

MHD

How to protect your biggest track investment: *straightaways*

THE BURKART TIE PAD
with the permanent seal

This fine stretch of track handles high-speed, high-density traffic and heavy tonnage, yet cross tie costs are at a minimum, thanks to Burkart Tie Pads.

Records show that spike lifting and the need for tamping, regauging and general maintenance have been so materially reduced that the pads have paid for themselves many times over.

You can effect the same savings on *your* straightaways or anywhere your track maintenance costs are high. For complete information write:

F. BURKART MFG. CO.,
Railroad Tie Pad Div., Division of Textron, Inc.
4900 N. Second St., St. Louis 7, Mo.

DURABLE ECONOMICAL

THE RACOR TIE PAD

(PATENT PENDING)

PROVIDES

Maximum Protection at Minimum Cost

CURVES

TURNOUTS

The RACOR TIE PAD is a rubber fibre compound of minimum thickness possessing the necessary tensile and compressive strength to withstand the destructive forces in track, yet is sufficiently flexible to adapt itself to the irregular surfaces of the ties.

This Tie Pad is the result of intensive research and many years of experience in the manufacture of this type of material, giving us the "know-how" to produce a Tie Pad of maximum utility at minimum cost.

Exhaustive tests on the RAMAPO Tie Wear Machine show that the RACOR TIE PAD is most effective in preventing tie abrasion, in maintaining a clean, comparatively moisture-free tie under the pad, and in maintaining its own shape and physical properties under the severest test conditions.

All RACOR TIE PADS (unless specifically ordered otherwise) are coated with a special sealing compound which is stable over a wide temperature range. This seals the pad to the tie and prevents the entrance of foreign materials, such as sand, dirt and water between the pad and the ties, thus assuring maximum protection to the wood immediately under the pad.

AMERICAN Brake Shoe COMPANY

FEATURES

★ **The RACOR TIE PAD** will extend tie life because it will:	1. materially reduce or eliminate plate cutting 2. reduce spike killing 3. retard softening of the wood fibre under the pad
★ **The RACOR TIE PAD** will extend the effectiveness of track fastenings because it will:	1. cushion shock 2. delay deterioration of the tie
★ **The RACOR TIE PAD** will maintain better surface and gage because it will:	1. cushion shock 2. distribute the load more evenly 3. reduce or eliminate eccentric plate cutting 4. extend the effectiveness of the tie plate fastening

RACOR Tie Pads are impregnated with a fungicide which retards deterioration of both tie and pad.

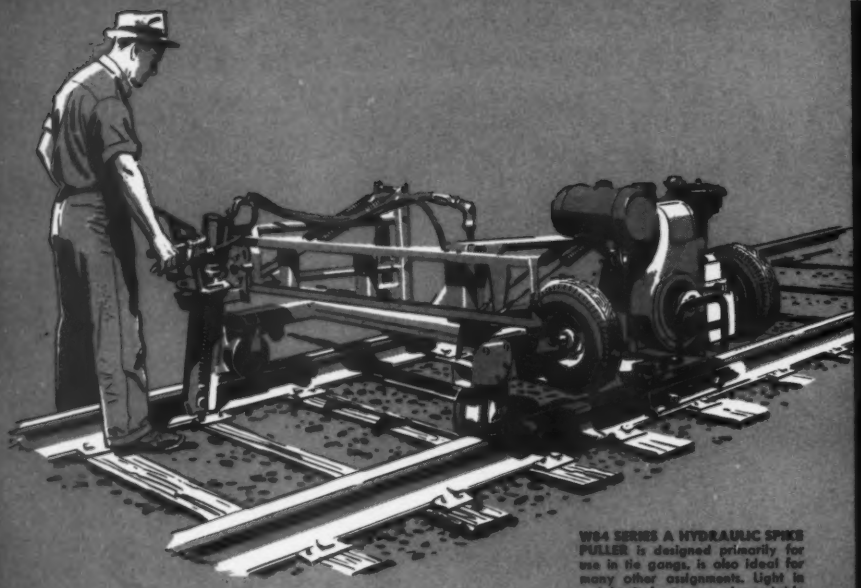
The economies possible through the use of the RACOR TIE PAD will provide greater savings than heretofore possible. Their use should be considered wherever severe tie wear, expensive ties or bridge timbers or high maintenance costs prevail. When used under insulated joints the life of the insulation is extended and joint maintenance is reduced.

STANDARD SIZES AVAILABLE

7" x 10½"	7¾" x 12"	7¾" x 19"	8" x 12½"
	7¾" x 12½"	7¾" x 22"	8" x 17½"
7½" x 10"	7¾" x 13"	7¾" x 24"	8¾" x 14"
7½" x 11"	7¾" x 14"	7¾" x 26"	
	7¾" x 14¾"	7¾" x 28"	9" x 11"
7¾" x 10¾"	7¾" x 15½"	7¾" x 30"	10" x 24"
7¾" x 11"	7¾" x 18"	7¾" x 32"	14" x 14"

Other sizes can be furnished, but generally the above standard sizes will take care of most installations.

RACOR
TRADE MARK



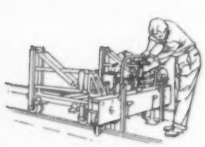
W84 SERIES A HYDRAULIC SPIKE PULLER is designed primarily for use in tie gangs, is also ideal for many other assignments. Light in weight, it features a dependable engine, ball and socket mounted pull assembly. Will pull spikes from either rail without change-over.

Is your problem tie renewal?

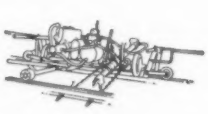
You'll find the answer at Fairmont

Experienced railroad men have, through the years, come to know and rely on Fairmont products. They know from personal experience that they represent the very latest in design and engineering—and the very finest in performance and quality. And that is why—regardless of the maintenance problem at hand—Fairmont is looked upon as the logical source for maintenance equipment. In the field of tie renewal alone, Fairmont designs and manufactures a wide variety of products—each, in its area of operation, the perfect choice for dependability, economy and thoroughness of work. Like all Fairmont products, they are the result of years of careful design and engineering—and of actual field testing on the job. They have been proven through long use in the hands of maintenance men the world over—and have established themselves as the overwhelming choice of operating personnel everywhere. If tie renewal is your problem, we urge you to study the representative equipment pictured here and to contact us for complete, detailed information. You'll quickly discover why we say—"If there's a job to be done—there's a Fairmont to do it!"

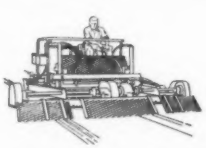
FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA



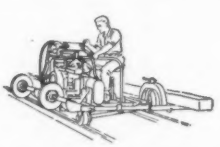
W86 SERIES A HYDRAULIC RAIL LIFTER makes tie plate removal and insertion unusually easy . . . with its spring-counter-balanced lifting arms, welded steel supporting frame and direct-driven hydraulic pump. Two-man track removal.



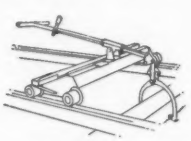
W68 SERIES A HYDRAULIC TIE REMOVER removes ties at a rate of approximately one per minute under average operating conditions. Ruggedly built, and with a minimum of moving parts, this unit requires only two men for operation.



W87 SERIES A TIE BED SCARIFIER with but one operator can dig ten feet of tie bed a minute to a uniform controlled depth and at right angles to the rails. The assembly is hydraulically operated, as is the drive for renewable digging teeth.



W90 SERIES A TIE INSERTER inserts ties quickly and easily and requires only two men for operation. Maintenance is remarkably low because of its simple design and sound construction. This unit is self-propelled for greater efficiency.



W83 SERIES A TIE NIPPER guarantees fast, efficient action. A simple linkage and lever give positive opening and closing of hooks, assure simple operation and great dependability. Handle can pivot to three different positions.

MANUFACTURERS OF INSPECTION, SECTION AND GANG CARS, HY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT

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RAILWAY

TRACK and STRUCTURES

January, 1955 **Vol. 51, No. 1**

NEW FABCO SEALER*

*Pat. applied for

Assures Quick and Lasting Bond of Pad to Tie...

The section illustrated under glass shows in conventional form the structure of a FABCO Self-Sealing TIE PAD with its new, factory-applied seal on the bottom side and a thin non-adhesive coating on the top side.

FABCO Self-Sealing TIE PADS

Superior Advantages of FABCO Self-Sealing TIE PADS

New FABCO Sealer

- New sealing compound completely seals out moisture and dirt between pad and tie.
- New sealing compound flows in around spike and prevents intrusion of water into spike hole.
- Because sealing compound is applied only on the side next to the tie, freedom of movement of the tie plate is permitted with no disturbance to the tie bond.
- New sealing compound withstands extremes of temperature.

FABCO Tie Pads

- Withstand moisture, brine and all weather conditions.
- Do not squash or crush in heavy service.
- Permanent resiliency in winter and summer affords maximum protection against the crushing of wood fibres and assures tight spikes.
- Exceptionally long life assures low final cost.

"Perfect Seal and Long Life"

This new and improved seal provides a quick and lasting bond of the pad to the tie.

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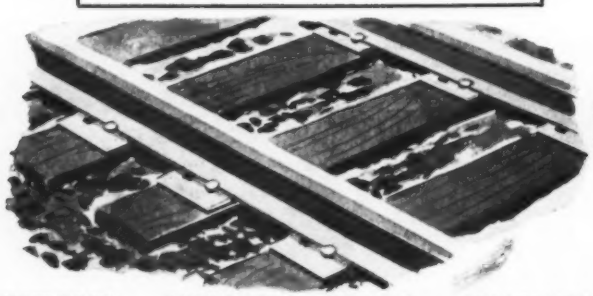

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RAILWAY
TRACK and STRUCTURES

Don't Let Snow Fighting Drift!

The problem of dealing with winter storms is one that has come in for its full share of attention in the efforts of maintenance-of-way officers to get maximum economy and efficiency. Some interesting developments in this connection came out at the December meeting of the Maintenance of Way Club of Chicago.

The speaker of the evening—C. E. Weller, division engineer of the Chicago Terminal division of the Illinois Central—described, among other things, the snow-fighting equipment and practices used in his territory. Of special interest are eight weed burners which have been found to be very effective in melting snow at switches. These units are brought in off the line after their summer's work is done to supplement regular snow-fighting equipment and devices.

One of the most significant statements made by Mr. Weller is that the Illinois Central has not found it necessary for many years to hire extra help in the Chicago area during snow storms. This is in contrast to former years when, on occasion, the number of extra men required to fight snow ran into the hundreds. As they are presently organized for winter operations, the regular section gangs have sufficient men to handle snow storms, but this work is so highly mechanized and so efficiently organized that the men needed are no more than are required to handle normal maintenance.

The IC may or may not be an exception in the extent to which it has reduced snow-fighting costs. However, any road that still finds it necessary to hire temporary manpower during any but the most exceptional storms may wish to review its practices to determine if possibilities exist for further economies. After all, allotments for normal maintenance are skimpy enough these days without having them depleted further by expenditures for unproductive work like fighting snow.

Whose Responsibility?

During the years when dieselization of motive power was in full swing frequent comments were heard to the effect that when this program had been completed more money would be available for property maintenance and improvements. Well, the day has come when many roads have reached or are approaching complete dieselization, but where are the enlarged programs that were supposed to materialize for the benefit of the fixed properties?

First, let's make allowance for the fact that railroad business has suffered rather severely during the past year. However, it appears now that the turn has come and that the picture for 1955 is definitely brighter. But so far little evidence can be found to indicate that preparations are being made to take advantage of the opportunity to catch up on improvement and maintenance work that has been long deferred.

Suppose we start with the assumption that the properties as a whole are in pretty good shape. Even so, can any road deny that there are individual situations or structures that need attention in one way or another? How about those stations and other buildings that have become obsolete and are in need of replacement for the sake of economy or other reasons? What about those cases where investments in improved facilities will bring large returns?

Engineering and maintenance officers have a dual responsibility; they must do all they can to minimize expenditures, but at the same time their efforts in this direction must take into consideration the necessity of maintaining the properties to a decent and safe standard of condition and efficiency.

In other words, engineering officers have the responsibility of going to bat for budget items they believe to be essential for one reason or another. Only then can it be said that management becomes responsible for what happens.

M/W Equipment Purchases Were Affected by . . .

. . . DIESELIZATION, which, causing more rapid rail wear on curves, requires more rail lubricators.

. . . DEVELOPMENT of new machines like this track liner . . .

Uptrend Expected, but . . .

Equipment Buying Declined in 1954

Purchases of M/W machines last year are estimated at 7,325 units having a value of approximately $16,400,000. Reports from railroads, plus signs of better business, suggest that equipment buying will be at higher level this year.

● Purchases of maintenance-of-way work equipment in 1954 showed a few bright spots—such as rail and flange lubricators, portable power plants, power saws and power jacks —but on the whole the number of such machines acquired by the railroads last year was down substantially from 1953. Surprisingly enough, however, the estimated dollar value of these purchases for 1954 ($16,400,000) showed a decrease of only $100,000, or .06 per cent, compared with the previous year, indicating the acquisition of a relatively larger proportion of the more expensive units. As for 1955, the prospects, as brought out later in this article, are for at least a moderate upturn in work equipment purchases which will even carry them to a level higher, dollarwise at least, than 1953.

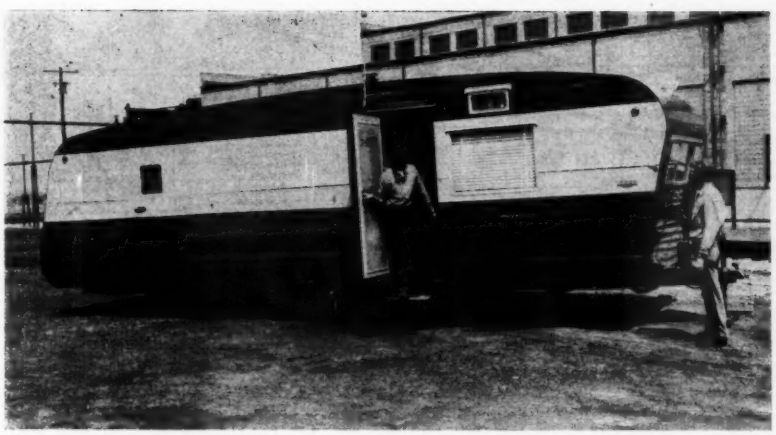
To ascertain the facts regarding M/W equipment purchases in 1954, *Railway Track and Structures* addressed a questionnaire to the officers of 470 railroads, large and small, in the United States, Canada and Mexico. These questionnaires were returned by 355 of the roads addressed, which included replies from all but 5 of the Class I line-haul and switching and terminal companies. Of the roads submitting replies 166 reported purchases of 7,211 units of work equipment. With this figure as a basis, it is estimated that the railroads as a whole purchased a total of 7,325 units of work equipment last year at an estimated cost of $16,400,000. Of the reporting roads 106 are Class I carriers. Forty-seven of these reported an increase in the volume of units acquired while 58 reported decreases.

What about 1955?

Of the railroads answering the questionnaire 74 gave estimates of proposed equipment purchases for 1955. Forty-five of these roads reported they expect to buy more equipment, two said they expect their purchases to be the same, and 27 stated they would be less. These 74 roads in 1954 bought equipment having a total purchase value of $6,887,000. Their estimated equipment purchases for 1955 came to $7,306,800, an increase of 6 per cent.

It must be emphasized, however, that these estimates were largely made before the current upturn in business got underway. If the upturn continues, and forecasters generally are in agreement that it will, it is reasonable to assume that some of the 74 railroads at least will be moved to revamp their equipment purchase plans on the upward side, so that they will be in a better position to carry out with maximum economy the enlarged maintenance programs that seem likely to accompany any sustained increase in carloadings.

The reported purchases of equip-



. . . A TREND toward the use of house trailers for employees, and a sustained . . .

. . . DEMAND for tools for B&B forces.

ment for 1954 are shown by major categories in the accompanying table, along with comparable figures for 1953. In preparing this table individual items of equipment are included in the categories with which they are most usually identified when working. For instance, rail-laying cranes have been included under rail-laying equipment, and do not appear with the other cranes. Moreover, those items which are adaptable to several uses in the field of track maintenance are included in the category of miscellaneous track equipment.

Transportation Units Lead Field

Purchases of equipment for the transportation of men and materials again led the field in the total number of units purchased during the past year. For the first time the number of highway vehicles acquired (1236) exceeded the number of units (992) of comparable equipment purchased for operation on the rails. Purchases of highway trailers, including a substantial number of house trailers acquired for the accommodation of various types of gangs, increased from 84 in 1953 to 189 reported last year. Purchases of track motor cars, which for years have led the list of individual items purchased, dropped to 800 from the 1953 total of 1342. Contrasted with this was the purchase of 264 automobiles, only 20 less than were purchased in 1953. Trucks suffered a greater setback than automobiles, falling from a total of 1036 in 1953 to 779 last year. The purchase of motor-car tops and windshields continued at the same pace as in 1953, with a total of 1240 units reported in both years. This was probably because of the regulations of governmental bodies that require the railroads to equip track cars with these accessories.

A significant increase occurred in the number of rail and flange lubricators acquired during the past year. Purchases of this item jumped from 250 units in 1953 to a surprising total of 430 in 1954. This increase is unquestionably due to the fact that diesel power results in faster wear of the high rails of curves, requiring that preventive measures in the form of rail lubricators be taken to conserve rail life. Lubricator purchases are included in miscellaneous track equipment in the table, largely accounting for the increase in that category.

Portable Generators Up, Too

Another item which showed an increase in the number of units purchased during the past year was that of portable generators which is included in the category of power plants in the table. Purchases of this item increased from 126 units in 1953 to 135 units in 1954. Of possible significance in contributing to this increase was the fact that small portable tools, listed in the category of bridge and building tools and equipment, continued to be purchased in substantial numbers. This category made a more favorable comparison with 1953 than any other group except miscellaneous track equipment.

Several individual items included in the B&B group chalked up gains or showed no reduction in the number of items purchased. These included derrick cars which recorded sales of 31 units for both years; drills, which showed an increase of 5 units; and power saws, which increased from 148 in 1953 to 230 in 1954.

Another ray of sunshine in the otherwise bleak 1954 picture was the increased purchase of power jacks which are listed in the category of ballast and ballast-maintenance equipment. Purchases of this item increased from 55 in 1953 to a total of 62 last year.

New Machines Gain Acceptance

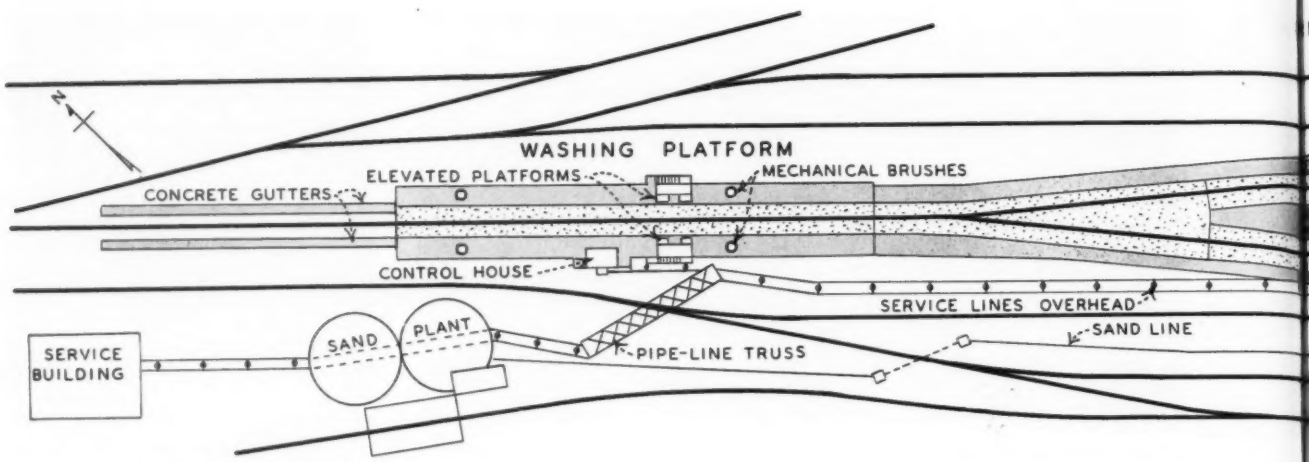
A number of new types of machines have made their presence felt during the last year. These include power track liners, a track gager, ballast regulators and distributors, and tie-renewal machines. These items, some of which were introduced in late 1953, are gaining acceptance because they offer a means of helping to reduce maintenance costs.

The number of roads renting work equipment continued at about the same rate as in 1953. A total of 23 roads reported they followed this practice to a greater or less extent. However, because of the varying bases used in reporting, it was not possible to correlate the various items for comparison purposes.

Purchases of Work Equipment

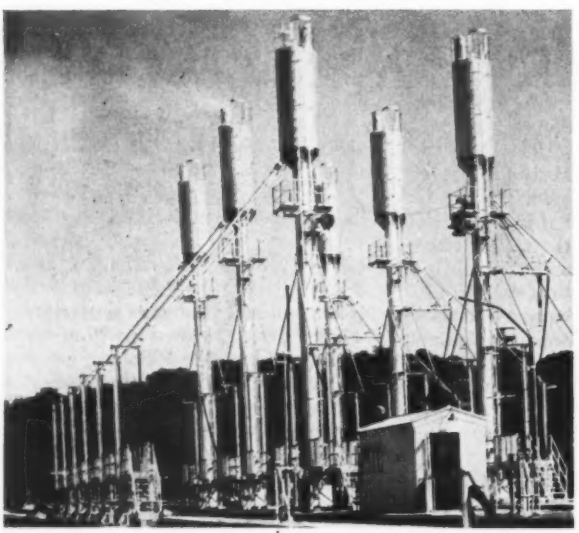
	Number of Units	
Category	1953	1954
Ballasting Equipment	1887	903
Bridge & Building Tools and Equipment	697	592
Cranes	73	42
Grading Equipment	390	146
Miscellaneous Track Equipment	387	617
Power Plants	277	233
Rail-Laying Equipment	889	608
Snow-Handling Equipment	*	211
Tie-Renewal Equipment	119	96
Transportation of Men and Materials	4188	3470
Weed-Control Equipment	194	110
Unclassified Items	328	183
Total units reported	9429	7211

* This item not determined categorically in 1953. The item for 1954 includes 200 gas switch heaters.

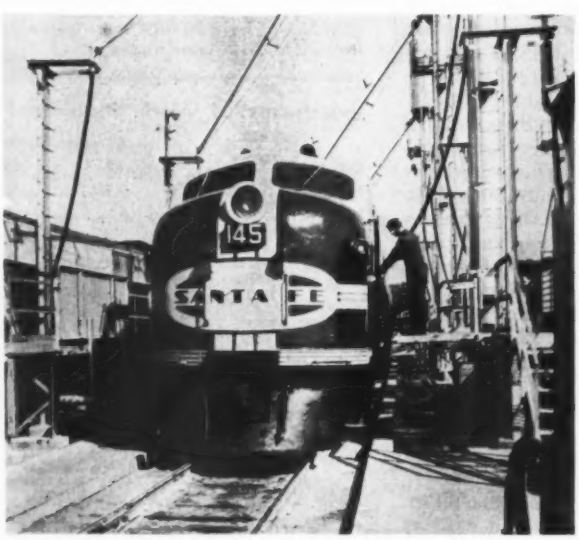


SERVICING INSTALLATION is laid out on three tracks—two for road engines and one for switchers. Arrangement of facilities

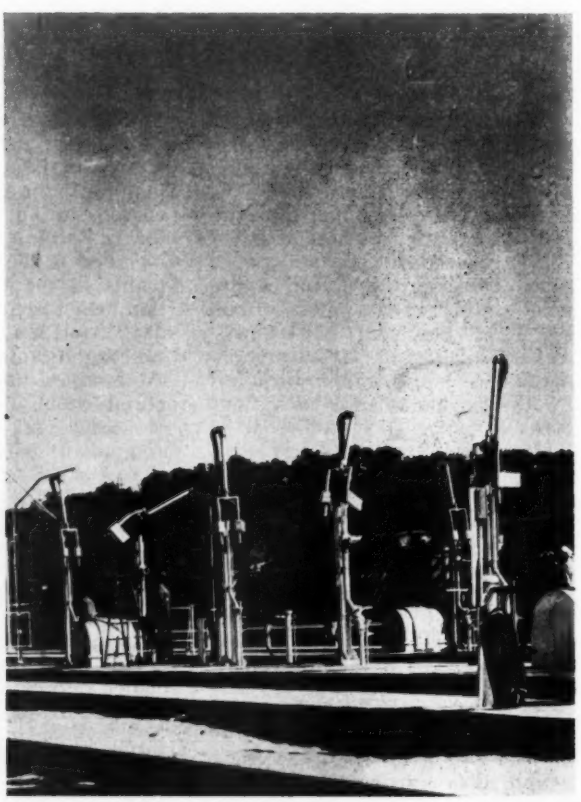
Arrangement at Santa Fe's new Argentine (Kansas City) diesel terminal features a three-track layout equipped with the latest facilities for rapid servicing of diesel locomotives. Concrete platforms serve all tracks throughout area, and concrete track slabs have been installed at fuel-water-lube and washing stations.



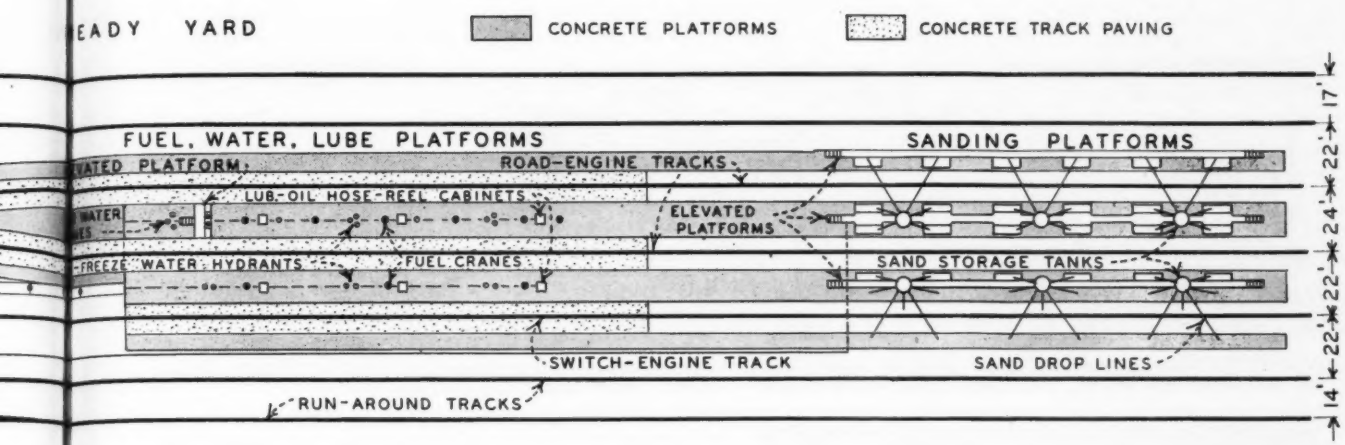
SANDING station is equipped with six sand towers and elevated steel walkways along each side of each track with . . .



. . . **RETRACTABLE** sections which permit attendants to stand close to engines while filling the sand boxes.



SERVICE PLATFORM has fuel- and boiler-water cranes, non-freeze radiator and fresh-water hydrants, air outlets and steam-heated lube-oil hose-reel cabinets.



enables three-unit locomotive to pass through entire service line in an average of 30 min.

For Speedy Locomotive Handling . . . .

"Production-Line" Servicing Layout

● A diesel servicing installation that enables three-unit locomotives to move through a complete sequence of sanding, fueling, watering, lubrication and cleaning operations in an average of 30 min., with only two stops, was placed in service recently at the Santa Fe's new Argentine diesel maintenance terminal at Kansas City, Kan. The servicing facilities are laid out along three tracks, two of which converge into a single track passing through a system of mechanical body washers. The third track, used principally for switch engines, bypasses the washers.

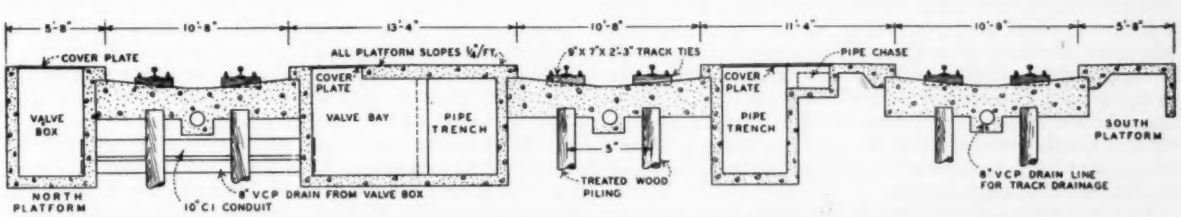
Six Sand Towers

At the east end of the three tracks, where incoming engines arrive, are six Fairbanks-Morse sanding towers, three in each of the inter-track spaces. These towers are spaced 50 ft apart so that a three-unit locomotive can be spotted on any one of the three tracks and have its sand boxes filled without respotting. Each track is supplied from six sand hoses on each side. Elevated steel walkways of subway grating extend along each side of each track. At the location of each sand hose at the walkway level there is a small retractable platform to permit the attendant to stand close to the locomotive while filling the sandboxes. The platform automatically retracts when the attendant steps off, thus maintaining the required side clearance.

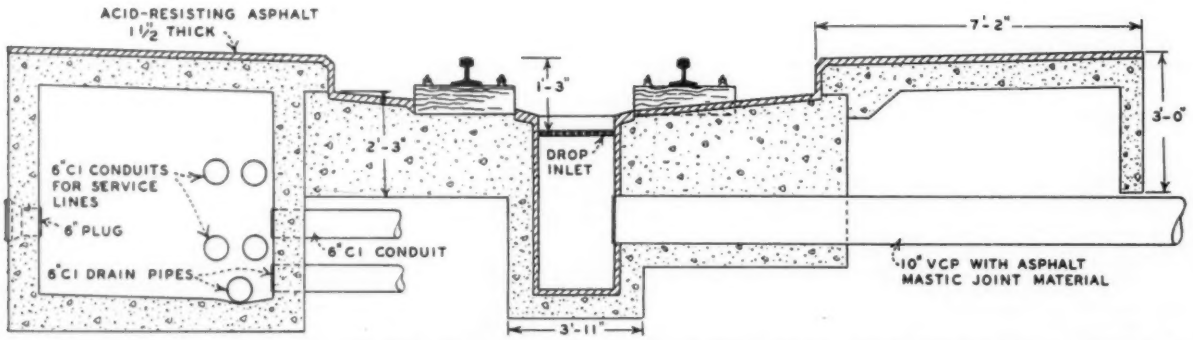
After a locomotive leaves the sanding facilities, it passes onto the fueling and watering platform. At the entrance to this platform the locomotive passes a system of truck-washing sprays, which are controlled by an electrical track circuit. These sprays apply a cleaning solution to the entire truck assembly automatically when a locomotive enters the circuit. Water at 250-psi is also available through Murdock non-freeze hydrants for manual truck cleaning. Special nozzles permit one man to handle the high-pressure hoses. These hoses are also used to wash down the platform area, and are quite effective for removing grease and other water-resistant compounds.

At the road engine fueling and watering platform three-unit engines can again receive complete servicing at one spotting. On this platform are five Snyder fuel-oil cranes at 25-ft intervals and six similar cranes at 25-ft intervals for supplying boiler water. On the switch-engine platform, there are three fuel-oil cranes 50-ft apart. Lubricating oil is furnished through air-driven hose reels which are enclosed in steam-heated cabinets, three of which are located along each platform 50 ft apart. Radiator water and fresh water are supplied through Murdock anti-freeze hydrants at strategic points along the platforms. Compressed air outlets are also located along the platforms.

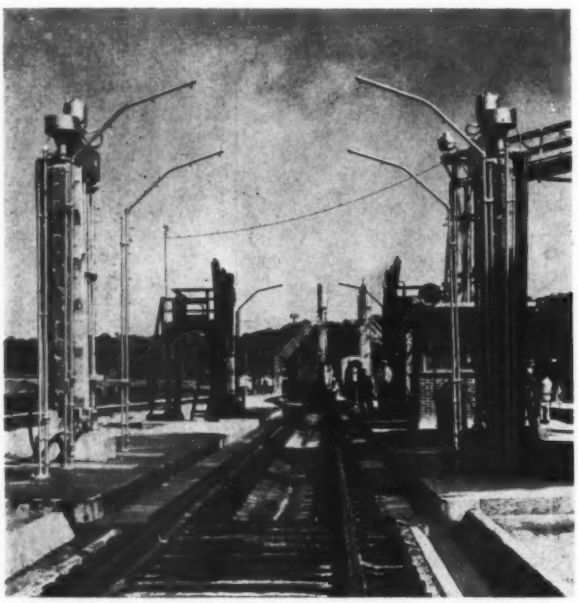
Another service performed at the fueling and watering platform is the sterilizing of the containers in which



PIPE TRENCHES and track and platform construction are shown by typical cross-section through fuel-water-lube platform.



WASHER PLATFORM is served by a pipe tunnel for cleaning solution and water lines and has a drainage system with drop inlets at 50-ft intervals along the track. Acid-resisting asphalt has been applied where cleaning solutions are used.



MECHANICAL washing equipment includes a sequence of plain water sprays, cleaning-solution sprays, scrubbing brushes, rinsing sprays, rinsing brushes and two rinsing sprays.

drinking water is carried on the locomotives. This is done with a high-pressure steam cleaner mounted on an elevated steel platform. This platform is also equipped with a retractable section which allows the attendant to step back and forth between the engine cab and the platform. Engines at this spotting also receive a thorough cleaning inside, engine adjustments, minor repairs, test of air-brake equipment, etc.

Mechanical Washer Operations

The final stage of servicing is carried out at the washing platform over which engines are moved slowly without stopping. First in the washing sequence is a high-pressure truck-rinse spray which washes off the cleaning solution applied at the entrance to the fuel-and-water platform. Mechanical body washing is then commenced by application of plain water to the entire engine with body sprays. These are followed in sequence by cleaning-solution sprays, scrubbing brushes, rinsing sprays, rinsing brushes and, finally, two rinsing sprays. All the equipment for carrying out these functions was supplied by the Whiting Corporation.

Between the scrubbing brush and the first rinse spray, manual scrubbing of locomotive roofs is performed from elevated platforms also equipped with retractable platforms like those previously mentioned.

All of the ground-level platforms at the servicing facility are of reinforced concrete construction. In the vicinity of the mechanized body-scrubbing brushes, the concrete slab is covered with 1½ in of Johns-Manville acid-resisting asphalt-mastic industrial flooring. Between the leaving end of the sanding platform and the leaving end of the washing platform the rails of the two road-engine tracks are supported on short ties, 2 ft 3 in long, resting on a concrete track slab. The slab is sloped to the center of each track and is provided at intervals with drop inlets leading to a storm sewer system. The track for switch engines is similarly constructed adjacent to the fueling platform.

Supply Lines Carried Overhead

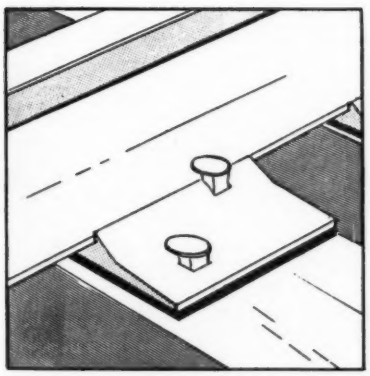
Supply lines from a service building and the existing central power plant are carried overhead to the fuel and water platforms on a row of steel columns and pass over the switch-engine track at the west end of the servicing area on a steel truss system. At the west end of the fuel-and-water platform, the supply lines drop down from the overhead system to concrete pipe trenches running longitudinally beneath the two center platforms (see drawing), from which connections with valves lead to the various service outlets along the length of the platforms. At intervals, conduits cross beneath the tracks to the outside platforms carrying service lines to outlets on these platforms.

Supply lines furnishing cleaning solutions and water to various locations on the washing platform are also carried longitudinally beneath this platform in a concrete pipe trench.

Mechanical-washer operations are controlled from a small concrete and brick building located about the middle of the washer platform. Other buildings include a small metal structure at the west end of the sanding platform, which is used for records and for checking crews in and out.

A service building houses Fairbanks-Morse pumping equipment, Dearborn Chemical No. 580 cleaning solution mixing tanks, a Fairbanks-Morse lube-oil booster heater system and various other equipment necessary to operation of the servicing facility. Sand storage and drying facilities, also located near the west end of the service tracks, are part of an old sand plant which has been converted to serve the new installation.

The servicing facilities were built by the Winston Brothers Construction Company, Minneapolis, Minn. A. W. Johnson, steam heat and water service engineer for the Santa Fe, Eastern Lines, had direct supervision over the design and construction work.



The tie pad is a relative newcomer in the track maintenance field, but its use has grown phenomenally. Where is it being used? What do track men think of it? What is its future? To answer these questions a survey was made which revealed the . . .

. . . Status of the Tie Pad Today

● New ways of doing things and new ideas for making materials last longer are continually being tried out by maintenance-of-way departments. Some of these innovations appear on the scene only briefly. On being put to test they are found wanting for one reason or another, are discarded — and forgotten. Others, however, survive the ordeal of the service test, are found to produce worth-while savings and find for themselves a permanent niche of usefulness in the maintenance-of-way field.

It now can be said that the tie pad comes in the latter category. Acceptance of the tie pad has not been an overnight development. The first tie pad was introduced nearly 20 years ago. Since it could be had only at a price, maintenance-of-way men could not accept it without first being convinced that the savings in the form of longer service life for ties would be greater than the cost. Perhaps the tie pad would long since have entered the limbo of forgotten practices if it were not for two developments: (1) The increasing cost of wood ties; and (2) The increased cost of the labor needed to insert them.

In other words, as the cost of the crosstie in track became dearer it became easier to justify the cost of means to prolong its service life. Such justification has proved less difficult in those locations where the mechanical wear of ties is the greatest or where the cost of the timber to be protected is the highest. Assuming that a tie pad will remain effective for the required period of time, it would seem to be a matter of simple arithmetic to determine whether it is economically justified. Apparently, however, the problem isn't as simple as this, for, as brought out later in this article, there are still wide differences of opinion regarding the economy of tie pads for most locations, with the possible exception of bridges.

Doubtless the question of the economy of tie pads has been clouded somewhat by the introduction of secondary considerations. Apparently there are situations where such economy should not be decided altogether on the basis of the degree to which the life of the wood is prolonged. Take insulated joints as an example. On some roads that have had experience with tie pads at such locations, the experience has been that joints so equipped require less attention to keep them in surface. There is even one school of thought which holds that the use of tie pads out of face in any location helps to reduce the amount of track surfacing required, and that curves hold their gage better when equipped with tie pads.

For some time the editors of this magazine have been conscious of the varying degrees to which tie pads are accepted on different roads. It was apparent that some roads were using them more extensively and at a greater number of locations than others. It was evident, moreover, that on a considerable number of railroads the use of tie pads had become an accepted practice for some locations, while on others their use had not passed beyond the experimental stage, at least for some of these locations.

Many questions are raised by a situation of this sort. Why are some railroads using tie pads more extensively than others? Why have some lines standardized on their use for certain locations while on others they are still considered to be in the experimental stage? Why is it that one railroad can justify the use of tie pads at, say, insulated joints, whereas others may feel that they produce no benefits?

To determine the answers to these

WHERE TIE PADS ARE BEING USED

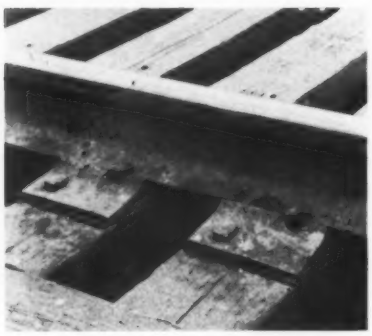
o Indicates service tests only

● Indicates more or less regular use

RAILROADS	BRIDGES	INSULATED JOINTS	RAILROAD CROSSINGS	CURVES	HIGHWAY CROSSINGS	TANGENT TRACK	TURNOUTS
B&O	o		o				
GN	●		o				
IC	●	●	o	o	o		
M-K-T	o	o					
NYC	o	o					
NYNH&H	●	●	●	●	●	●	●
NP	o	o				o	
PRR	●	o	o	o		o	
RF&P	o	o	o	o	o	o	o
SAL	●	●	o	o	o		
SOO LINE	●	o	●	o			
TRRA	●	●					
T&P	●	●	o	o			
WP	●	●	●	●	●	o	
ERIE	●	o	o				o
A *	●	o	●	●	●	o	o
B *	●	●			●		o
C *	●			o			
D *	●	●	●	o	●		o
E *	●		●			o	

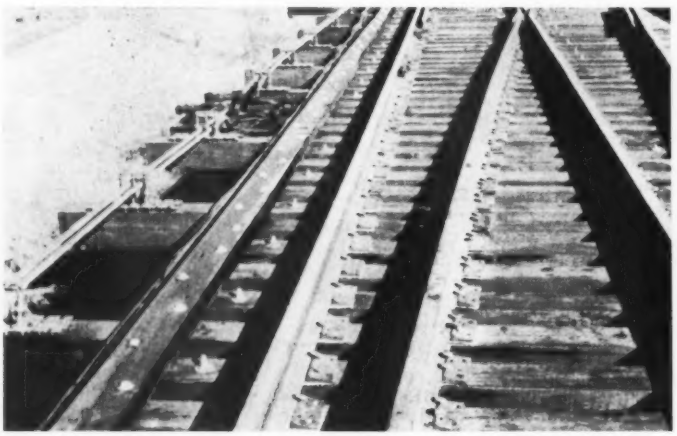
* Names withheld by request

On bridges and approaches . . .



ACCEPTANCE of tie pads has made greatest headway on bridges. These . . .

. . . TWO VIEWS show an installation of Racor tie pads on a six-track bridge of the Indiana Harbor Belt at Melrose Park, Ill., near Chicago.



WEST APPROACH spans of the Merchants' bridge of the TRRA of St. Louis across the Mississippi river are now equipped with Bird tie pads.

TIE PADS are reported to reduce maintenance costs at bridge ends. These are Bird pads.

Thank You!

The photographs reproduced on these and the following pages are presented through the courtesy of the following manufacturers of tie pads:

Bird & Son, Inc.
F. Burkart Manufacturing Company, Railroad Tie Pad Division
Fabreeka Products Company, Inc.
Railroad Rubber Products, Inc.
Ramapo Ajax Division of American Brake Shoe Company
The Zone Company

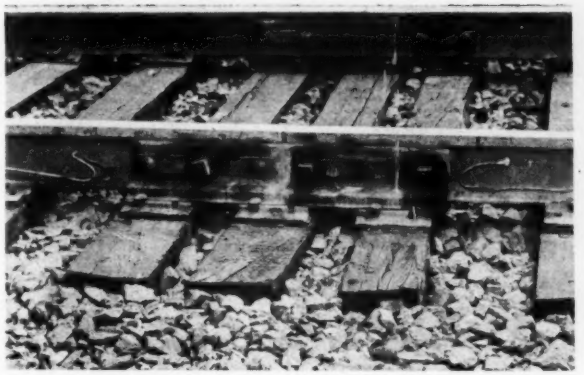
and other questions a questionnaire was circulated among 27 roads, of which 20 submitted detailed replies. To the extent that the replies indicate the degree of use of tie pads at various locations, the results are given in the accompanying tabulation. It will be noted that all 20 of the roads represented have used tie pads on bridges at least experimentally and that 15 of them have standardized on their use on bridges at least to some degree. In this "popularity poll" for tie pad use, insulated joints come next measured by the number of railroads using them, experimentally or regularly. Next come railroad crossings, curves and highway grade crossings in the order named. A fair sprinkling of the railroads queried have installed tie pads at turnouts and on tangent track, but in most instances such installations have been of an experimental nature. Installations have also been made at a number of special locations as discussed later.

The answers to the questionnaire, in so far as they contained expressions of opinion or statements regarding the economies of tie pads, are summarized as follows:

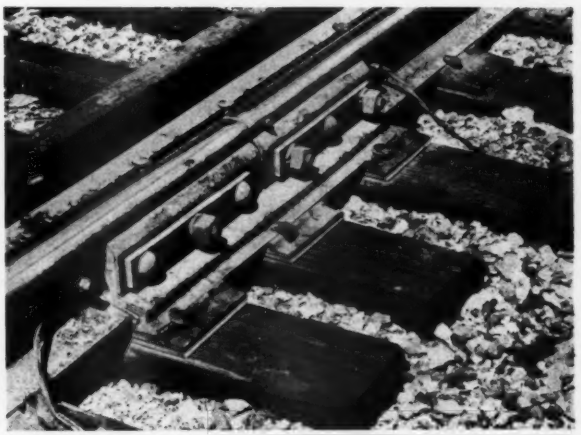
Bridges—Because of the relatively high cost of bridge ties it is not surprising that tie-pad use comes more nearly being universal on bridges than at any other location. Perhaps the situation with respect to the use of tie pads on bridges is best summed up in the words of T. P. Polson, chief engineer, New Haven, who stated that "the greatest benefit is derived from tie pads used on bridge timber because of the high cost of timber and also of the labor to install it." Tests on the New Haven, he said, have proved that tie pads add at least 10 years additional life to bridge timbers.

Most of the 15 railroads indicated in the table as making more or less regular use of tie pads on bridges are installing the pads when bridge ties on open-deck structures are renewed out of face. In some cases this practice is confined to steel bridges but in others it has been extended to include timber trestles. One railroad, the Texas & Pacific, is carrying out a program involving the installation of tie pads on bridges where the rail or tie plates

At insulated joints . . .



INSTALLATION of Bird pads at insulated joint after five years. Maintenance reported to be negligible.



BURKART pads at an insulated joint. Consensus is that multiple savings accrue through use of pads at such joints.

At crossings and turnouts . . .

RAILROADS say pads lengthen crossing life. Burkart pads are being installed here.

CROSSOVER on the Richmond, Fredericksburg & Potomac has Bird 7-ply pads. Note that track on left is also padded.

are scheduled for continued use for several years.

When the Western Pacific makes tie renewals on steel bridges tie pads are applied for a distance of 15 ties beyond the ends of the structures. On the Soo Line tie pads are applied on 12 ties from the ends of bridges to reduce shock on the approaches. A somewhat similar installation has been made on the Erie at the approaches to a bridge, but in this case the pads, made of rubber, were applied between the tie plates and the rail. Thirteen ties were so equipped at one end of the bridge and 12 at the other. Previously some difficulty had been experienced in keeping these approaches in good surface. Since the tie-pad installation was made the amount of surfacing required at the bridge ends has been reduced more than 50 per cent, according to officers of the road.

The experience of the Erie with the use of tie pads on bridges indicates, incidentally, how this practice can take hold and be extended. In May 1950, instructions were issued from the office of the chief engineer maintenance of way providing for the use of tie pads on open-deck bridges located on curves of 1 deg. 30 min. or more. Tie pads were to be installed on both main-line and branch-line bridges in connection with out-of-face renewals of the decks or in cases where the decks were only three or four years old. On May 1, 1953, supplementary instructions were issued providing that this practice be extended to all open-deck bridges regardless of whether they are located on curves or on tangent track.

What do maintenance men say about the economy and effectiveness of tie pads on bridges? Apparently none of the railroads queried on this subject has developed specific figures on the savings to be expected, but there seems to be general agreement that the cost of installing tie pads on open-deck structures, particularly in heavy-traffic territory, is justified. Here are some typical comments relative to the results obtained to date with tie pads on bridges:

"Pads placed in 1950 and inspected in 1954 were found to be in good condition, spike holes were sealed and pads were pliable and no signs of excessive crushing."

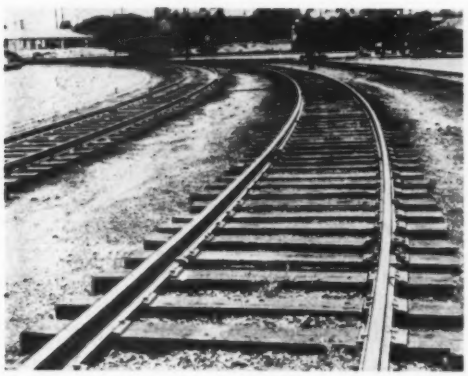
"Results to date are satisfactory but service has not been long enough to determine savings or average service life. One-hundred ninety-two million gross tons over bridge in 6 years and 95 per cent of pads still giving full protection to ties."

"We have had tie pads in track on high-speed bridge ties for five years. The improved condition of the ties justifies the cost of the tie pads."

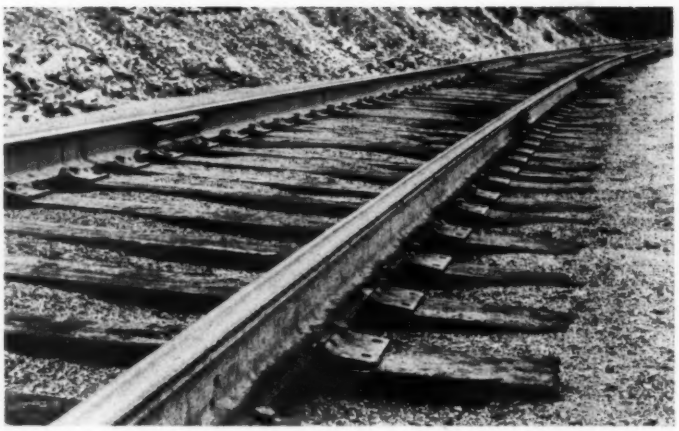
"Too early to judge. Sound level measurements show no reduction in noise. Durability of some types of pads leaves something to be desired."

"Results appear to be good; how-

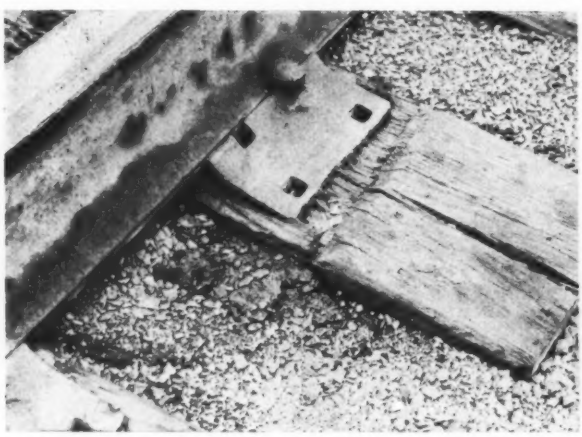
On curves . . .



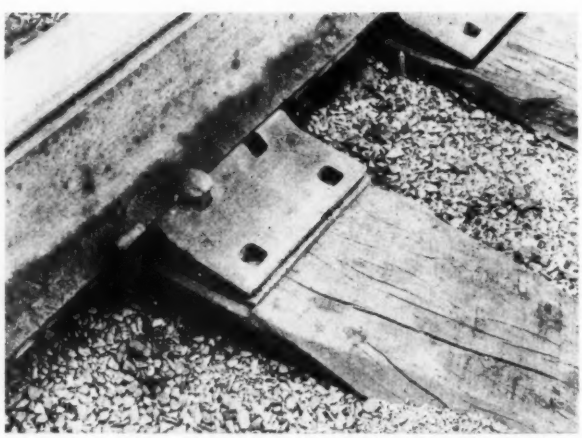
FABCO PADS protect ties on this sharp curve. Railroads having such installations say that . . .



. . . TIE LIFE is lengthened materially and that the pads help maintain gage. This view shows installation of Burkart pads.



EXCESSIVE tie-plate cutting of ties on a curve is illustrated by this view showing a tie under low rail.



HOW PADS protect ties on curves is shown by this installation of Burkart pads. One road says tie life is lengthened 10 years.

ever, installation is too recent to state any actual saving."

"Material decreases in mechanical wear on ties on both girder and open-deck bridges. Due to the installations having been in service only a few years, actual savings cannot be estimated."

"Tie abrasion greatly reduced. Seal coats keeping water and abrasive materials from tie-plate area. In our judgment these benefits are expected to increase tie life a few years."

"No damage to ties in six years. Cannot estimate savings, but should be considerable."

"Apparent increase in tie life by minimizing the mechanical wear. Some reduction in vibration of the steel structure."

"We have just installed 4000 on new bridge ties under tracks and turnouts on the Merchant's bridge in St. Louis. The installations will be carefully observed, but we have no information on savings at this time. (This answer from V. C. Hanna, chief engineer, Terminal Railroad Association of St. Louis.)

Insulated Joints — Although there is considerably less uniformity of practice in connection with the use of tie pads at insulated joints as compared with their use at bridges, replies to the questionnaire indicate clearly the existence of a strong current of feeling to the effect that there are possibilities for substantial savings in this field of use.

As indicated by the table, a number of railroads have standardized on the use of tie pads under insulated joints, mostly in main track. In several cases it was indicated that tie pads are also being placed under the tie plates of ties directly adjacent to the insulated joints. For the most part, the practice seems to be to install tie pads at these locations in connection with rail-lying work, although a few roads indicated that these insertions are made when the track is surfaced, when new ties are installed or when new joints are applied.

Those railroads that have had experience with tie pads under insulated joints are, for the most part, rather definite in their statements of the benefits being realized. Typical comments follow:

"Spot tamping as well as tie abrasion reduced considerably. We have no cost figures, but observed results indicate savings in tamping alone will pay for the pads in a reasonable period."

"Installation under insulated joints of the shock-absorbing type of pad tends to decrease the rail-end batter and also prolong the life of the insulation, as well as reducing mechanical wear on the joint ties."

"Excellent. Increased life of fibers and better riding qualities. Other savings indeterminate at this time."

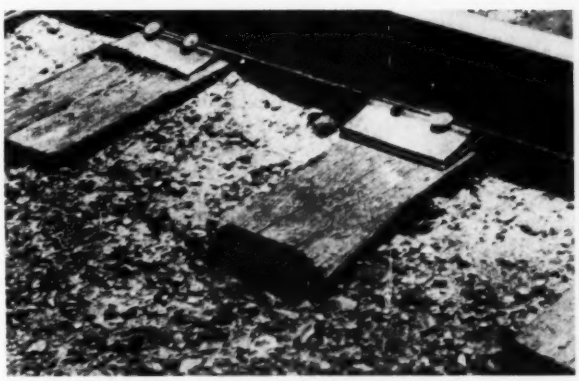
"Note definite saving in tie life but cannot say to what extent. Signal maintainers can also see saving

At highway grade crossings . . .

THIS CROSSING had been protected by Bird pads for six years at time photograph was taken. Some roads report substantial savings from such use.

INSTALLING rubber pads at crossing. Provided by Railroad Rubber Products.

On tangent track . . .



ADJACENT ties show protection by pads in busy terminal at location where sand is used. These are Fabco pads.

ROADS with test installations of pads on tangent generally report longer tie life and secondary savings. Burkart pads.

in insulation account extended service life. But there again cannot say to what extent."

"We are doubling the life of insulation in joints due to the use of pads."

Several other railroads with test installations of tie pads under insulated joints indicated it was too early to judge the results or that they were inconclusive to date. One road complained that tie pads placed under insulated joints did not last over one year.

Railroad Crossings—As indicated by the table, a fair sprinkling of railroads have standardized on the use of tie pads at railroad crossings, the practice generally being to place the pads when the crossing is renewed. Other roads with test installations of pads at railroad crossings indicated they were giving good results but apparently most of these roads are not yet prepared to adopt them as standard, except possibly for those crossings that do carry exceptionally heavy traffic.

Those railroads that have had experience with the use of pads at crossings are generally rather definite in discussing the benefits. Some typical comments follow:

"First installed in 1945—results to date show about 10 per cent saving in maintenance costs and an estimated 12 years longer timber life."

"Pads have been installed at several locations. Performance to date satisfactory. Savings and expected service life not available. Time elapsed too brief."

"Excellent. Reduced mechanical wear, better riding qualities. No figures on savings. We estimate life of crossing doubled."

"Where shock-absorbing tie pads have been used the life of the crossing has been increased about twice that where no pads were used where traffic conditions are equal. Also the build-up—that is the interval of time elapsed from one build-up to the next—has been just about doubled."

"Increased tie life by reducing the mechanical wear. Reduces maintenance and gives some added benefits to the crossing itself, which results in better riding qualities."

"Reduces wear on timber, and provides cushion to absorb impact on frogs."

"Sound level measurements show no reduction in noise. Otherwise too early to judge."

"Preserves timber—should double life of crossing ties."

"Results are up to our expectations."

Highway grade crossing—The "double load" carried by the rails at highway grade crossings, i. e., both railroad and highway traffic, creates a situation where it might be expected that the use of tie pads would have an extra appeal. That this situation is receiving recognition is indicated by the fact that 5 of the 20 railroads submitting detailed replies to the questionnaire indicated that they are installing tie

TWO VIEWS of the "Zoner Tie Shield" in service on a new and old tie.

pads at highway crossings as a regular practice.

One of these roads stated that it was installing such pads when the crossings are rebuilt, another indicated that tie pads are now installed on all ties renewed within paved areas, a third said that tie pads are applied at new public highway crossings and where major repairs are made, and a fourth indicated that tie pads are inserted when the ties through a crossing are renewed. The fifth railroad in this group installs tie pads in instances where precast or prefabricated slab crossings are placed on new ties in territory where the rail will receive the company's flat-bottom tie plates.

A railroad on which the use of tie pads at highway crossings is still in the test stage said that the results so far have been "excellent," that the ties at the test locations show reduced mechanical wear, and that the track holds surface longer. One of the roads that is using tie pads as standard practice at highway crossings said that the mechanical wear of the ties at these locations is "reduced greatly" and that much of the sand cutting experienced where pads are not used "has been eliminated."

Curves—The relatively high degree of tie-plate cutting of ties on curves has caused a number of railroads to investigate the possibilities of preventing such damage by the use of tie pads. Numerous railroads have made test installations of pads on curves, but to date few have standardized on such use.

Among these latter roads is the New Haven which inserts tie pads on all main-line curves during rail-laying operations. In fact, this road also inserts pads on tangent track in main-line territory when rail is laid. The Western Pacific recently adopted the practice of applying tie pads on new ties on curves of 8 deg or more. Studies are now under way on this road to determine whether pads should be used on curves of 4 deg or 5 deg. Still another road applies tie pads on curves in excess of 4 deg in territories where the grades are heavy.

One of the railroads using tie pads on curves said that, as a result of this practice, tie life is being lengthened by at least 10 years. Another says that the results are good, that there is no tie cutting, and that the "gage is okay." Still another stated that tie pads on curves reduce mechanical wear and are helpful in maintaining gage.

A road which so far has only test installations of tie pads on curves reported that they are giving satisfactory service on a 4-deg curve after seven years. A second road with only test installations said that the cost of tie pads on curves is justified by reason of the maintenance labor saved, and the chief engineer of a third stated that he visualizes the possibility of using tie pads on all curves.

Turnouts—Only one of the reporting railroads—the New Haven—indicated that it was making regular use of tie pads through turnout frogs and switches. On this road tie pads are applied through all new main-line turnouts and through existing turnouts on main-line tracks when the timbers are renewed.

A number of other roads have test installations of tie pads through switches and frogs, and the comments made regarding these are generally favorable as to the results being obtained. One road stated, for example, that "such installations have materially decreased the mechanical wear on the switch ties and reduced wear and batter on the frog points, especially where solid manganese frogs are used. This has extended the build-up period to twice the time that was necessary where no pads were used."

Several railroads are contemplating the more extensive use of tie pads at turnouts. One of these is considering the use of such pads under new installation of switches and frogs, and another is making studies to determine if tie pads should be used on all switch ties or on only part of them.

Tangent track—Again the New Haven is the only railroad, which, to date, has standardized on the use of tie pads on tangent track. As indicated previously in this article, the New Haven applies tie pads on ties out-of-face during rail-laying work in main-line territory. Opinion on that railroad is that such practice is lengthening the life of ties by at least 10 years. A number of other railroads, as indicated by the table, have test installations of tie pads on tangent, but few of these having such installations are prepared to comment.

However, one railroad with tangent-track tests that have been in service three and five years said that the results are good, that there has been no tie-plate cutting, and that gage is good. The chief engineer of a western road said that the use of tie pads on tangent track in sand territory produces "some extended tie life by reason of reduction in mechanical wear." Also, that the use of tie pads at such locations "appears to reduce maintenance and hold spikes better than without pads."

Other locations—Special locations where tie pads are being used include station tracks, continuous welded rail, mitre rails at drawbridges, and turntables. Several railroads apparently have standardized on the use of tie pads under mitre rails. Summing up the experience of these roads, the chief engineer of one of them said that "impact is reduced at mitre rails by use of pads; therefore we are getting longer life from head-block timber and mitre rails with 10 per cent less maintenance labor."

A railroad that has used tie pads at station platforms where there is heavy sanding said that there has been "a reduction in plate cutting over a period of seven years."

On the basis of the replies received to the questionnaires, it is safe to say that the tie pad is here to stay. The only question is the extent to which it will ultimately be used.

The Art of Track Raising . . .

Part II — Using the Spot Board

By Leo C. Blanchard

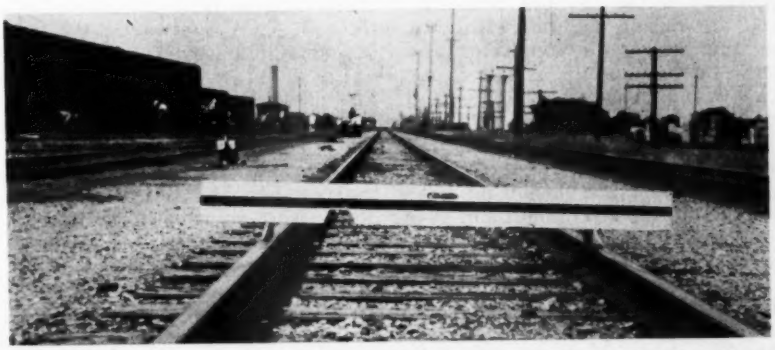
Roadmaster
Chicago, Milwaukee, St. Paul & Pacific
Minneapolis, Minn.

The procedure involved in raising track with a spot board and sighting blocks is explained in this installment. What to do when the line of sight strikes the spot board above or below the black line is also explained, and the use of grade stakes is discussed. It also tells how to skeletonize track using a spot board, and how to handle sun kinks.

• A spot board is to a track raiser what a lining scope is to a track liner. It is an easier, more accurate way of producing good surface. While I have been complimented many times for my ability to surface track by eye alone, I will take a spot board any time in preference. Nevertheless, it is not foolproof and you have to know something about track raising to use it successfully.

There are a great many variations in spot boards. Some of them you lay across the rail and sight about the same as for raising with the eye alone. Others you can stand up to sight. Some use sighting scopes. I am going to confine my remarks, with only brief comment on the others, to the basic spot board used by most railroads. If you understand this one you will have no difficulty with the others.

A basic-type spot board is made from a plank 1⅛ in thick, 8 in wide and 12 ft long. It is painted white and has a black stripe 2 in wide centered on the board and running the full length of it. The spot board is provided with a leveling device and has a handle for carrying it. Two sighting blocks are furnished, which are of a height that will exactly coincide with the top of the black stripe on the spot board when all three are setting flush on top of the rail. The purpose of course is to sight across the two blocks to the top of the black stripe.



SPOT BOARD of the basic type in position for sighting a raise. This board is 1⅛ in thick, 8 in wide and 12 ft long. The black stripe is 2 in wide.

WHEN MOVING the board forward the foreman should step outside the track and sight the rail to pick out a good spot for the next position of the board.

How to Get Started

The No. 1 problem in using a spot board is how to get started. Within the immediate vicinity of where you wish to start raising, look for a high spot in the track or a good place to "take off" from. You must determine whether your average lift is going to be 1, 2, 3, or 4 in. Let's assume that it will be 2 in. Start your raise by eye and come up gradually for a proper run-off, until you have reached an approximate 2-in lift. Have someone carry the spot board forward, while you step outside the track far enough to sight the rail and pick out a good spot for him to set the board, preferably not more than four to six rail lengths ahead of your raising. He should set the board so it will be raised 2 in above the top of rail.

Now for the sighting blocks: Since you tamp one tie at the jack to hold the track up while you make the next raise ahead, place one block, known as the jack block or "rabbit," on top of the rail directly over the jack tie to be tamped. Keep the other block, known as the sighting block or "bunny," in your hand and back away 1½ rail lengths from the jack block. Place the sighting block on top of the rail directly over the jack tie that was previously tamped. With your eye held at the top of the sighting block, have the jackmen raise the track until the jack block shows slightly higher than the top of the black stripe on the spot board.

After the jack tie has been tamped, release the jack and the top of the jack block should then just be even with the top of the black line on the spot board. If it remains a little high, bump the tamped tie with the jack or a maul until it settles just the right amount. In case too much black on the spot board shows it will be necessary to

Some useful pointers . . .

WHEN SIGHTING a raise the foreman should be 1½ rail lengths back from the point where the jack block is placed.

TAMPERS should never be permitted to get closer than ½ rail length to the nearest jack.

reraise and retamp the tie. Absolute accuracy is the keynote here. As you are raising the rail with the sighting blocks the opposite rail must be brought up at the same time with an assistant bringing it to exact level with the level board.

If you are using a power jack, the procedure is essentially the same except that the jack block is usually attached to the level board and extends out far enough to see past the wheels on the power jack.

I want to emphasize again that the sighting blocks should be used 1½ rails apart. There is a reason for this. If, when raising a joint, you are sighting from a joint only one rail length away, any error in the raising will be carried along. If, on the other hand, you sight from a center while raising a joint there is a tendency for any errors to correct themselves quickly. Also, if you are 1½ rail lengths from the jack you will be the right distance away to sight with your eye as a double check in addition to the spot board.

One other point should be mentioned at this time. Never permit the tampers to get closer than ½ rail length from the leading track jack. The quarter rail between the joint and center just back of the jack is always arched a trifle until the next raise is made when it settles back into place. If this should be tamped while it is arched, a high spot in the track would result.

Moving Spot Board Forward

As you approach the spot board with your raising to within one rail length of it, have it removed and sent forward. Leave both your sighting blocks in place where you last sighted to the top of the black line on the spot board. Have the spot board reset about four rail lengths ahead and place the 2-in block under the spot board and on top of the rail. Now, sight across the top of your sighting blocks, and if your line of sight hits the top of the black line on the spot board, you may proceed with your raising. If your line of sight strikes above the black line you have the choice of raising the spot board to it, or else dropping down with your raise to fit the board. Here is how to decide which to do. If the spot board is located in a short dip in the track, it would be proper to raise the spot board to improve the general surface of the track. But if, on the other hand, the spot board is at a high spot, it would be better to drop the raise down to meet the new setting of the board.

To be a good spot-board man, you must have a good understanding of how to reset the board, so let's go over this point once more. Let us suppose that, when you send the spot board ahead to be reset, it requires a 4-in block under the spot board to bring it to the line of sight. This will give the track more raise than you are prepared to give it. Suppose that 3 in is the maximum lift you care to make and 1 in is the minimum. The thing to do then is to drop the board down to the 3 in. Your sighting blocks will then probably check in close to the top of the board, instead of the top of the black line.

On your next raise do you then sight in to the top of the black stripe as usual? You absolutely do not, although you would be surprised how many track raisers do it that way. What should you do? Well simply this: You make your next raise almost to the top of the spot board and, using your previously learned eye-raising technique, you sight the underside of the rail to satisfy yourself that the raise is going to be all right. On your next raise you drop just a tiny bit more and check with your eye and you continue doing this for several raises until you are back on the top of the black stripe as you want to be, and then hold it.

Now for the sake of argument let us suppose that when you sight on the next board setting you find your sighting blocks match in below the black line. First of all decide whether the board may be lowered 1 in. To determine this, step outside the track and take a long look down the track. If the board is setting on a high spot it would be safe to lower it, but if not, and the track ahead appears in good general surface, you had better leave the board with 2 in under it with your blocks sighting in near the bottom of the board. On your next lift of the track, you must not come back immediately to the top of the black line, but instead, and very gradually with each lift, bring the sighting blocks closer to the top of the black line so that you are once more on it before it is again necessary to send the board forward for resetting. This is known as changing grade and is something you will have to contend with each time you approach the top of an ascending grade, or the bottom of a descending grade.

The jack block, or "rabbit," used in surfacing, is made of a triangular piece of wood, wide at the bottom to rest on the rail, with a sharp clean edge at the top. For this purpose, some attach a special device to the level board. I like to have the top edge painted a bright yellow to contrast sharply with the black and white spot board.

It seems that every individual raiser has his own idea of how to

TWO BOARDS are a time saver. One is moved while other is in use.

make a sighting, or "bunny," block. Some use a wedge-shaped block of the same size and dimensions as the jack block. Some use a paddle type that easily drops into a hip pocket. This type may have a peep hole through which to sight. This hole is at the same height as the top of the jack block. Some use a block having ¼-in or ½-in notches to be used in changing grade. Instead of starting at the top or bottom of the spot board and working toward the top of the black line as described above, they change one notch at a time on this sighting block until they reach the normal setting of the notched block and the top of the black line on the spot board.

I personally prefer just a simple soft pine paddle that will fit in a pocket and which has a sharp square edge at the top, darkened with lamp black to prevent reflection of a bright sun when sighting over it. The sighting edge seems to me to be faster than a peep hole and sufficiently accurate. After all, the purpose is to hold your eye at the same level above the rail as the top of the black line on the spot board or the top of the jack block. The more simply this is accomplished the better.

For the same reason I have never cared for the notched sighting block. It is so easy to forget which notch was used last. In common with most track raisers, I depend as much on my eye-raising ability as on the spot board. After each raise with the sighting blocks I quickly duck down and take a look along the under side of the ball of the rail. If it appears all right, that is fine; if not, I double check.

I have used an optical instrument for raising track and without question you can run a beautifully accurate surface with such an instrument; nevertheless, the objections are manifold. Because you can see the spot board so clearly, the tendency is to set it far down the track so as not to have to move it so often. In doing this you lose control of the amount of your raise. First thing you know the tampers are running short of ballast because the raise is coming too high; or else the reverse is true because you are running too low. In other words the old surface between you and the spot board can vary considerably without your realizing it and setting the spot board too far in advance can get you into trouble. I find the optical instrument is slower to sight than a common block and requires a certain amount of fussing.

There is one thing about the use of optical instruments for raising track that should be cleared. Many foremen are confused by the cross-hair that is mounted in most of these instruments. While there may be some occasional use for the cross-hair, it would be less confusing to the average track raiser if it were removed entirely. The important thing about using one of these instruments is that the eye-piece end be adjusted to the exact height of the top of the black stripe on the spot board. The cross-hairs can then be used to check the jack block against the spot board. After this adjustment is satisfactorily completed, disregard the cross-hairs by sighting the jack block and spot board in the ordinary manner. Many foremen find the optical instrument too slow because they mistakenly try to use the cross-hair.

The optical instrument works best in connection with the use of grade stakes where the spot board has a pre-determined setting. It is an aid to failing eye-sight and it impresses the raiser with his responsibility for an accurate job.

Now then, what about the type of spot board and sighting instruments that allow you to stand up and do the sighting for the raising of the track? You will have to admit they are wonderful for comfort, especially on a blistering hot day when the ballast is red hot. The trouble with this equipment is that you lose that extra touch of being able to sight the rail in addition to sighting the spot board.

Summing up, it is, in my opinion, pretty hard to beat the old-fashioned spot board and two simple blocks for running an economical and satisfactory surface, where grade stakes are not being used.

Grade stakes were mentioned. What are they and how do they affect the track raiser? Grade stakes are set by the engineering department. Usually they are 2 in square and about 30 in long. They are driven into the ballast shoulder of the track about 100 ft apart. One end of the spot board rests on the stake while the other end is set to exact level.

The engineers go into the field and compute the existing grade, and from this, desired corrections are made when establishing the new grade. Stakes are then driven along the shoulder about six feet out from the rail on which to place the spot board to assist the track raiser in bringing the track to the desired grade. It is expensive to establish these grade stakes, and when the company feels the expense is justified it is certainly not too much to ask the track raiser to respect them. In years gone by it was a common thing for the ballast gangs to disregard the grade stakes, and instead run their own grade with the spot board. Occasionally an extra gang foreman would become exasperated by what he considered the poor judgment shown by the engineer in charge and would take matters into his own hands. He would have a lookout posted to warn the track raiser at the approach of any stranger and would then knock down the grade stakes as soon as the tampers passed them so that they could not be checked on.

Grade stakes are to the track raiser what center stakes are to the track liner. They are a wonderful help.

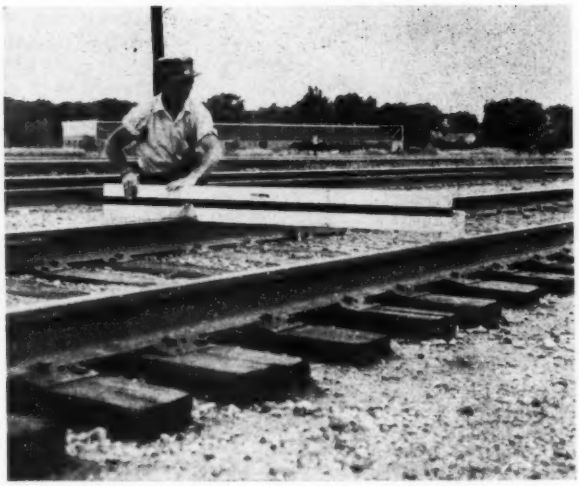
Skeletonizing with Spot Board

Assuming the old ballast is pit run gravel, it is customary to skeletonize the track before dumping the new ballast. In one method the track shoulder is first plowed off to a level with the bottom of the ties with a Jordan Spreader or other appropriate machine. If grade stakes are to be driven this work should be done after this plowing has taken place; otherwise they would be knocked down.

The second step in skeletonizing the track by this method is to set the spot board on the grade stake, but 4 in below the top of the grade stake and then raise the track to the spot board, keeping the track a uniform 4 in below the top of the grade stakes. Tamp as much of the material under the ties as can be done quickly and then scrape the balance to the bottom of the ties

How mechanism works . . .

WITH STAKES the spot board is placed on stake and blocked up on low rail as necessary to make it level.



WITHOUT STAKES low rail is carried to grade. Notch in spot board accommodates high rail.

out onto the shoulder which should level off nicely.

Now here is a mistake to be avoided. Many foremen of skeletonizing crews will raise the track with no regard at all for the grade stakes. All they think of is to get rid of the old ballast. The final result is that although the skeletonized track will be 4 in below the tops of the grade stakes in some places, as it should be, in too many instances the track will be 6 in or more below the top of grade stake, and in still other spots will be only 1 or 2 in below. This poses a terrific problem for the foreman unloading the new ballast, as it is almost impossible to regulate the exact amount of ballast needed.

This is what should be done:

A 4-in notch should be cut into the spot board to set down over the grade stake. As the track is raised for the skeletonizing crew it should be uniformly brought to 4 in below the grade stake even though you might have to throw in some old ballast for tamping-up purposes or in other cases have to dig out the excess old ballast in order to get the track 4 in below the top of the grade stake. The final results will be well worth the effort. When this is done the ballast unloading is simple. All that need be done is to run a line of ballast so many inches above the top of rail and all other ballast needs will automatically be taken care of. By this I mean more ballast will unload in certain spots where needed and less in other spots automatically. There will then be just enough ballast for the new 4-in raise and no ballast will be wasted.

When the final 4-in lift is made, rest one end of the spot board on the grade stake and bring the other end to level. Many foremen lay a tie plug on top of the stake and under the spot board in order to allow for about ½ in of settlement. Talk to your field engineer and find out whether you should do this, or whether he made proper allowance for the settlement.

It is a time saver to have two spot boards in use. As you approach the first board it can be removed and the second one is all set and ready to go.

When raising track around a curve use your spot board on the low or inside rail. This is always carried to grade. Normally, the outside or high rail is carried to the proper super-elevation by adjusting the level board. Use extreme care to see to it that the elevation is put in exactly as called for by the table of curve elevations. The elevation of curves is determined by the degree of curvature and the speed of trains. A raising foreman must never make any changes in the super-elevation without first handling with the proper authority.

How to Deal with Sun Kinks

Sun-kinks are costly of both time and material; therefore, you should do everything possible to avoid them. Have some one go ahead of the raising and loosen the bolts in any frozen joints. The joint bars should be struck a sharp blow with a maul to free them and cause the rail ends to come together, after which the bolts should be retightened. Watch behind your raising and if you notice a kink developing in the rail, send men back immediately to straighten it out and throw in some ballast to bind the ties and hold it in line. If you wait too long to do this, the kink will develop rapidly until about all that can be done is to cut in a shorter piece of rail. When the temperature is above 80 deg trouble may be expected at the foot of grades or in sags. When you have any choice in the matter the work should be done against the direction in which the rail tends to run. Under such conditions be sure that all trains approach at restricted speed.

Sections of track opened up must be filled in completely before the end of the day's work and loosely filled track protected by orders when necessary. Preferably, the track should be raised on clean ballast and care used not to mix the old material with the new. Tamping must be done directly under and about 15 in on each side of rails. The centers should be filled and only lightly tamped.

After a 4-in raise has been completed and several trains have had an opportunity to settle the newly raised track, it may be desirable for a small spotting crew to cover the track and pick out any small spots that failed to settle uniformly. The track raiser doing this job should be sufficiently skilled in his work so as not to spoil the good surface of the track. This work is usually done just ahead of the dressing gang.

[The third, and final, installment of this series will appear in the February issue. It will be devoted primarily to a discussion of tamping techniques, including some of the quick-tamping methods used by "old timers," as well as the conventional procedures.—Editor.]

What'll It Be Next?

RUBBER CROSSING, with the asphalt-surfaced areas between tracks, gives impression of providing smooth ride.

Now It's a Rubber Grade Crossing

● What is reported to be the first highway-railway grade crossing to be constructed of rubber is now in service, appropriately, at the "rubber center" of the world—Akron, Ohio. The crossing is located at the intersection of Wilbeth Road and the main line of the Erie, consisting of several tracks. However, only one track is equipped with the rubber crossing.

In this crossing, the vehicular roadway between the rails consists of specially designed and molded rubber slabs measuring 36 in wide by 59 in long, which were supplied by the Goodyear Tire & Rubber Co. The slabs are a little more than 3 in thick, including a sheet of heavy-gage steel sandwiched within each slab. They rest on heavy treated wood furring placed on top of the cross-ties, and each slab is fastened down by 12-in lag screws extending through metal and rubber grommets.

The ends of those slabs that go between the rails are constructed with tapered flanges along the bottom side. When sprung into place against the rail webs these flanges are reported to form a watertight fit. Small rubber slabs, placed outside the rails, extend to the ends of the ties.

Special wear and skid-resistant rubber compounds were used in making the slabs. The wearing surfaces are built with a diamond design molded into the rubber.

TO INSTALL slab, the rubber flange at one end is placed against one rail after which . . .

. . . FLANGE at other end (below) is sprung into place against rail web.

DURING FLOOD in 1951, the Kansas river inundated the Rock Island bridge at Kansas City. Mechanism for raising spans during high-water periods such as this had been only partially installed at that time. Note accumulation of drift.

When River Floods...

LIFTING MECHANISM permits all three spans of structure to be raised 8 ft during periods of extreme high water, thereby allowing the free passage of drift and providing a more adequate floodway.

Up Goes This Railroad Bridge

Here's a new type of "vertical lift" bridge. However, instead of being raised to permit the passage of water-borne traffic, the spans are elevated temporarily during times of high water, and then only a limited distance. Purpose is to get larger waterway and to prevent drift accumulation.

● As part of a program of flood protection for the Kansas City metropolitan area (described separately in an adjoining column) a bridge of the Rock Island spanning the Kansas River at that point has been equipped with a system of tension-screw devices which enable the structure to be lifted vertically a distance of 8 ft above its bearings. The elevating mechanism has been provided for raising the bridge above the design flood profile established for that area, so as to permit the free passage of drift and provide a more adequate floodway.

The bridge consists of two 302-ft and one 119-ft through-truss spans which carry a single track connecting the road's Armourdale yards on the Kansas side of the river with an industrial development and its old freighthouse on the Missouri side. During peak floods of

How mechanism works . . .

REMOVABLE PINS connect each of the four lower corners of a span with steel linkage which is raised by means of a . . .

. . . **TENSION-SCREW** mechanism, powered by electric motors and located directly above on steel frame jack towers.

the past the deck of this bridge has been covered with as much as 7 ft of water over the top of rail.

The lifting mechanism includes four rigid steel frames, one located on each abutment and each pier. The frames serve as jack towers for supporting the spans and to provide guides for raising and lowering the spans when they have been lifted free of the substructure. On top of each jack tower, and directly over the bearing point of the particular span, a geared nut has been installed, down through which a tension screw is threaded. Each of these screws is, in turn, connected to the lower chords at the bearing point by a series of links and pins.

Lifting of the spans is accomplished by electric motors, one on top of each jack tower, which are coupled to the geared nuts by gear drives. As the geared nut turns, the lifting screw is pulled upwards through the nut, thus lifting the span from its foundation. The motors for the installation are 440-v, 3-phase, 60-cycle, wound-rotor, induction units. A 75-hp motor has been installed to lift each end of the 302-ft spans, while 20-hp units are used to raise the 119-ft span.

Time for Raising Fixed

By agreement with the U.S. Army Corps of Engineers, which agency installed the lifting mechanism, the bridge spans are to be raised when the river level attains an elevation of 752.7 ft above mean sea level. This water level is 2 ft below the low point of the steelwork on the bridge structures. In the event that the water reaches the low point on the steelwork before the spans can be raised, the bridge cannot be lifted from its bearings, since the lifting mechanism is not designed to withstand the side thrust of surging water against the spans. On the upstream side, reinforced concrete walls have been erected on the tops of the piers to provide drift protection for the bases of the jack towers, and to deflect the surging water around the framework of the towers.

Except when the spans are being raised, the link-and-pin connections between the lifting screws and the spans are each disconnected by taking out a removable pin at the point where the linkage attaches to the span. These pins are stored in control houses located on the tops of the jack towers. When the bridge is to be raised, the running rails are disconnected at the ends of each span, the removable pins are inserted to connect the elevating linkage to the spans and the bridge is raised, one span at a time, by energizing the power units.

During the flood season regular inspections of the lifting mechanism are conducted at intervals not to exceed 30 days. During off-flood seasons the inspections are made at least every 90 days. These inspections are required in order to provide a reasonable indication of the readiness of the facilities for operation and to reduce the possibility of failure of vital electrical and mechanical equipment during emergencies. In addition, all of the equipment, including motor controllers, motors, transformers and lifting screws, is trial-operated and checked at least once every 90 days. These tests can be performed without actually raising the spans off their bearings.

The bridge-raising mechanism was designed and constructed under the direction of the U.S. Army Corps of Engineers. The work was performed under contract. W. B. Throckmorton, chief engineer, and J. F. Marsh, engineer of bridges, of the Rock Island, have general supervision over maintenance and operation of the installation.

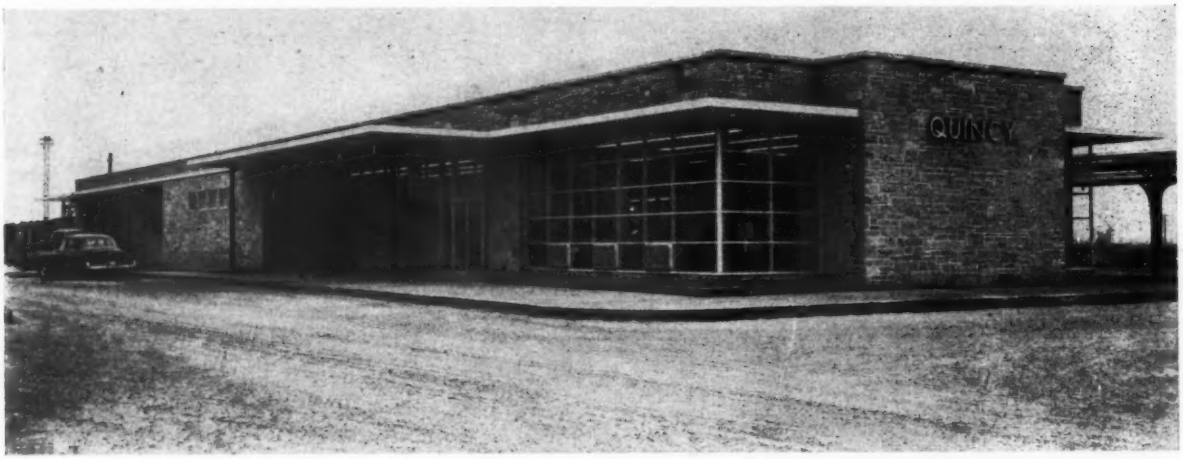
Outline of Flood-Protection Plan

At Kansas City the Kansas and Missouri rivers meet and divide that metropolitan area of nearly a million persons into two Kansas Citys—Kansas and Missouri. The two rivers have many times over the years overflowed their banks and caused widespread property damage and some loss of life in that twin-city area. The most recent and disastrous of these floods occurred in July 1951, when the community was almost completely paralyzed for weeks.

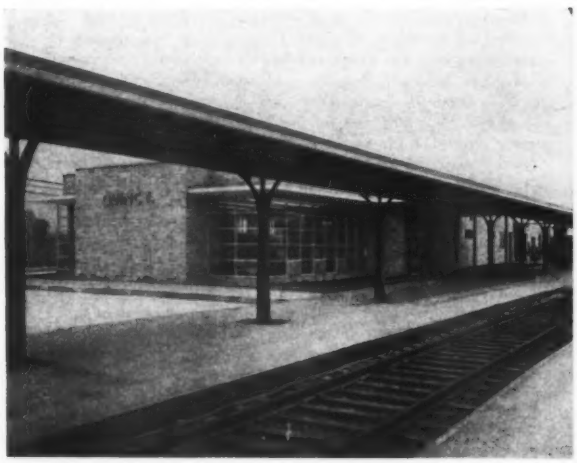
In an effort to contain and carry off the waters of these streams during flood times, the U. S. Army Corps of Engineers has designed a master flood-protection plan which provides for levees, flood walls, pumping stations and a river cut-off to supplement existing flood-control devices.

Included in this plan is a provision for widening portions of the Kansas River channel and for raising railroad and highway bridges above the level of high water so as to cause less obstruction to the water flow. Involved are six railroad bridges, three of which have been or are to be raised on a permanent basis, and three of which, including a structure of the Rock Island, have been provided with facilities for elevating the structures temporarily during high-water periods.

News Briefs in Pictures . . .



HANDSOME Burlington station erected recently at Quincy, Ill., features construction of lannon stone and concrete. Station is the major element of a $1,250,000 improvement and expansion program at that point. New building is located across the Mississippi river from business district and replaces an old passenger station situated in the center of town. Included at the installation are two 1,090-ft canopies over the platforms adjoining two main tracks (below, left). Focal point of the station interior is waiting room (right) which features exposed lannon stone walls, terrazzo floor, acoustical tile ceiling with recessed fluorescent fixtures and natural-finished walnut woodwork. Attractive color combinations and furnishings set off the area. An air-conditioned lunch room, separated from the waiting room by a glass-wall partition, seats 37 persons. Floor-to-ceiling windows (below, right) on three sides of waiting room not only provide wide-open view from the inside looking out, but also add materially to the overall appearance from the outside. Other facilities in the building include offices, storage, utility and baggage rooms, a technical equipment room and an express facility room.



WHAT'S THE ANSWER?...

. . . a forum on track, bridge, building and water service problems

Cold and Hot-Process Built-Up Roofs

Considering all factors, what are the relative economic advantages of cold-process built-up roofs and hot-process built-up roofs for most types of railway buildings? Explain.

Cold, Best for Unskilled Men

By J. A. Jorlett

Assistant Engineer Bridges & Buildings, Pennsylvania, New York

For the past six years my experience has been limited to hot-process roof jobs applied by contractors. Previous to this when I was master carpenter I applied four or five cold-process roofs using men from my painter gang. I have questioned my successor concerning the "wearability" of the roofs covered with these cold-process materials. He advises me that the roof coverings now in their tenth year of wear have stood up very well and have required only a coating of emulsified asphalt compound.

Railroad gangs are not static organizations due to the privilege which the men enjoy of moving from gang to gang when they believe another gang offers them better working conditions. In the light of such a situation I have found that the prime advantage in cold-process roofing is the ease with which it can be applied by the inexperienced men from such gangs.

With cold-process roofing unskilled men can take the time necessary to spread the plastic material evenly and properly arrange the plies of felt or other roofing material that they are using so that these plies are properly embedded in the plastic material. The application of the finish coating can also be more carefully done as the mechanic does not have to contend with its cooling. Since no heating of materials is necessary the factor of overheating is eliminated.

To apply a hot-process roof properly skilled mechanics are needed. These men know how to control the temperature of the hot asphalt or pitch and have the ability to know when the roof plies are properly adhering to each other when they are being cemented in place.

The exponents of hot-process roofs state that it is not necessary to recoat the wearing surface of such roofs during the life of the roof covering. This is a controversial matter. Many a hot-process roof has had its life extended by judicious coating with the proper materials when it wears thin.

Cost and Experience Govern

By B. J. Ornburn

Assistant Chief Engineer-Structures, Chicago, Milwaukee, St. Paul & Pacific, Chicago

We have in many cases adopted the use of the cold-process built-up roofs because they can be applied at less cost than hot-process roofs of similar composition and weight per square foot. It is our policy, of course, to maintain our roofs as well as all other parts of the structures in the most economical manner.

We have found in some cases that the cold-process coating has not stood up as well as we anticipated and this in my opinion has been due to not using a top grade of coating. It now appears that, in general, we should use a cold-process coating that will apply at the rate of two or more gallons per square.

We still use hot-process built-up roofs and I am quite sure that there will always be a use for some of this type of roofing on our structures. It does appear, however, that there is less delay in getting B&B crews started with the cold-process than with the hot-process built-up roofs.

Cost of materials, methods of application and the experience of the crews will greatly influence our decisions as to the method of making repairs with cold-process or hot built-up roofs because therein lies the secret of the cost of maintain-

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Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To be Answered In the April Issue

1. What, if any, advantages may be derived by providing a guard rail to protect the "turnout" point of a high-speed switch? How should such protection be installed? Is there any other effective method of protection that may be used? Explain.

2. How often should a masonry building be tuck pointed? What factors should be taken into consideration when deciding on whether such work is necessary? Explain.

3. What are the relative merits of supported and suspended rail joints for six-hole joint bars under 115-lb or heavier rail sections? Is it good practice to space ties uniformly without reference to the location of the joint? Why? Explain.

4. What factors determine the amount of emergency bridge material to be kept on hand to rebuild washed-out or burned-out timber bridges? Where should this material be stored? Who should be responsible for it? Explain.

5. What are the advantages of fracturing rails classed by detector-car operators as containing transverse defects? If these rails are not fractured to identify the type of defect, what precaution should be taken to prevent such unfractured defective rails from being relaid in track? Explain.

6. What are the most effective methods of cleaning and inspecting tanks used for the storage of diesel fuel? Explain.

ing these roofs. Sometimes I think we get too involved in deciding upon which process of coating we will use and overlook the importance of making the application before the felt in the existing roof dries out and the entire roof coating has to be replaced, when actually the roof could have been revitalized and protected at very nominal expense by making repairs based on the process used originally.

Set Ballast Stakes to Base of Rail?

What, if any, advantages can be gained from the setting of ballast stakes to the base of rail rather than the top of rail? Explain.

"Blue Top" Method Preferred

By M. L. Frederick
Division Roadmaster, Northern Pacific, Spokane, Wash.

It is doubtful if there is any advantage to be gained by setting ballast stakes to the base of rail rather than to the top of rail.

Ballast stakes are generally used where an out-of-face lift is contemplated and as a rule the stakes are set before the ballast is spread. This is done in order to determine the amount of ballast to be distributed. At the time stakes are set the raise is usually marked on the side of the stake. In my opinion the most practical method to use is the time-proven "blue top" method of setting the top of the stake to the proposed top of rail. With this method it is a simple matter to set the spot board on top of the stake, level it over the top of rail and then use a spot board and blocks for sighting along the top of rail which is generally clear of any obstruction.

It would be a decided disadvantage, in the writer's opinion, to set ballast stakes to the base of rail as this would invariably involve the expense and delay of clearing ballast to locate the base of rail, interference from men working in advance of the raising crew, delay in setting up spot board to proper location and level and proper adjustment of grade when different weights of rail are encountered.

Stakes, A Waste of Labor

By Track Supervisor

The setting of finished grade stakes on other than new-line construction is, in the opinion of this writer, a waste of expensive engineering department labor, and often causes considerable frustration on the part of the trackman who is attempting to raise track to them. The latter is true especially when the stakes have been set for some time and have received the benefit of several well aimed kicks or a tap from a restless trackman's spike or "Monday" maul.

However, assuming that the stakes are to be set, regardless of the pros and cons of using them, I can see no apparent advantage to setting them for base-of-rail elevation rather than top of rail, except that some rather insignificant savings might be made in the length of stakes required. Finished grade stakes are generally set back far enough from the track so that it would be immaterial whether they are at top-of-rail or base-of-rail elevation with regard to plowing ballast, etc.

Some persons might assume that by setting base-of-rail stakes, the weight of rail used would then have on effect upon the stake elevation. However, this seems to me to be a rather flimsy stand since rail has invariably been laid at the time stakes are set and corrections can be made easily at that time for top of rail elevation, if they vary from the predetermined finished grade elevations.

On the other hand, I can see at least one rather distinct disadvantage to using base-of-rail stakes, namely that it would be rather awkward to attempt to place a spot or level board flush with the base of rail and with the top of the stake. Ballast deposits under the rail would hinder this operation considerably and would probably necessitate digging out the eyes between ties opposite the stakes. Any attempt to take elevations on top of the rail base instead of the actual base of rail would certainly result in inaccuracies which, even though small, would justify criticism.

In summary, I can see no real advantage to setting stakes to base of rail instead of to top of rail, and there seem to be some rather outstanding disadvantages.

Unloading Ballast With Jacks or Pans

What are the relative merits of jacks and pans for the control of ballast unloaded from commercial hopper-type gondola cars? Explain.

Maintenance Practice Governs

By J. E. Eisemann
District Engineer, Gulf, Colorado & Santa Fe, Galveston, Tex.

On a considerable number of railroads it is necessary that distribution aids be employed when ballast is unloaded from hopper-type gondola cars as opposed to unloading from cars equipped with selective-type doors.

These aids are of several types and are used to insure proper unloading. Because of their ability to control ballast flow they correlate that flow to the needs at particular points. Those aids in most general use appear to be ballast pans and trench jacks, although some roads have been able to exercise efficient control by chaining the hopper doors to prevent their opening beyond a certain desired point.

We are, however, speaking of two separate methods of control when referring primarily to the relative use of ballast pans and trench jacks. While both of these aids can be used together, very little benefit will result except when unloading on the shoulder. In the case of either method, control of train speed is probably the most important consideration. In each instance, adjustments of either the jacks or pans are made to compensate for actual unloading re-

quirements and for the speed of the train. These adjustments are of course made at the expense of more rapid unloading effort and are necessary or the ballast will flow in a more or less uncontrolled manner.

The trench jacks are fitted with adaptors at either end which provide for easy attachment to the car and to the doors. The amount of door opening can then be regulated and controlled with certainty. While the flow of ballast can be stopped by adjusting the jacks, complete closure of the doors is difficult and not too practicable and, in most cases, not necessary. However, through use of jacks alone ballast unloading is concentrated in the center of the track. The small amount of ballast deposited outside the rails would be of little value in connection with maintenance distribution.

With reference to ballast pans, the best results can be obtained with these when it is desired to unload comparatively precise and limited amounts, especially where the need for uniform spread is not constant and preferably where maintenance unloading is being performed.

There are several types of pans that various railroads have made for their own use. Probably the most successful type is a rectangular-shaped, trough-like pan that is quickly and easily hung on each side of the car directly beneath the hopper door and which extends far enough laterally to allow for ballast distribution on the shoulders. With a specific unloading job to perform, various numbers of these pans are used and a proper combination will always assure a complete job with a single pass of the train. These pans are constructed with a small rectangular sliding door located at about their center. This opening is adjusted manually from the sides to control the ballast flow for spotting unloading in the center of the track. These pans are hung from the car sides with adjustable chains which can be either lengthened or shortened as required for side or shoulder unloading.

Generally speaking, while either method of unloading gives quite satisfactory results, where maintenance ballast renewals are to be made, the better and more satisfactory overall results can be obtained through use of pans, while a faster job of unloading greater quantities results when jacks are used. One can say that jacks are a bit more adaptable except when shoulder unloading work is required. The differences in efficiency of either manner of unloading are very slight and the preference tendency of each road is the result of long-standing practice since the forces of each road have been educated to the use of a particular device. In any case the individual road has, what is to it, a satisfactory unloading method, and in no case would the benefits of a change be sufficient to warrant the altering of their practice. The maintenance practice of an individual road may be such that the particular unloading aid in use satisfies its needs in a complete manner.

Pans Provide Good Control

By A. H. Whisler
Assistant Engineer, Pennsylvania, Philadelphia

While we have had no experience with cars of the ballast-distributing types, i.e., cars with longitudinal hoppers for distributing the ballast inside and outside of each track rail only as it may be required, we have for years experimented with the use of pans under the conventional or cross-type hoppers. These pans are suspended from the tops of the car sides by means of hooks and chains and extend under the full width of the car.

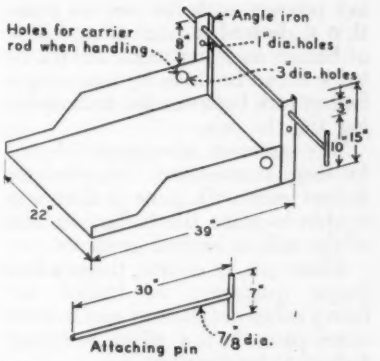
Studies have indicated that work-train time is reduced by 5 to 10 per cent when pans are used, and the distribution or leveling of the ballast by track forces is reduced 25 to 35 per cent.

These savings are attributed to better control of the amount of ballast discharged to the track. This makes it possible for those unloading the ballast to distribute it in the proper quantity at the location required and thereby reduce the amount of hand labor needed to work and dress track.

Uses Pans With Hopper Cars

By L. B. Cann, Jr.
Supervisor of Track, Richmond, Fredericksburg & Potomac, Fredericksburg, Va.

The unloading of ballast ahead of out-of-face surfacing for mechanical tamping and dress-up work has been successfully performed by use of ballast pans on the commercial hopper-type ballast cars. The



BALLAST UNLOADING PAN used by the RF&P is attached by means of a pin to the frame at the bottom of the car-door opening. The pan slides along the rail, directing the ballast flow toward the head of the ties and the shoulder.

actual distribution of the ballast by this method has been equally as effective as with commercial side-dump ballast cars although more time is required per car unloaded.

First, let me give a description of the actual pans used on our railroad. These pans (see drawing) are approximately 2 ft wide, 3 ft long and have 7-in sides. They are fashioned from $\frac{3}{16}$-in thick metal. A pin for attaching the pans to the frame at the bottom of the car-door opening slides through holes in the legs of two 2½-in angle irons attached one to each of the back corners of the pan. For a two-pocket hopper car two pans are required on each side. Eight pans are required to unload ballast in order that the time lost in moving the pans from one car to another may be held to a minimum. Two complete cars are usually set up for unloading before the operation begins.

After the pans have been attached to the hopper cars the latches are opened on one door at a time and the train is moved forward. The pans slide along the top of the rail and the ballast flowing from the car is diverted to the head of the ties and the roadbed shoulder. If the pan is attached to the car with the pin in the lower set of holes in the angle iron a small flow of ballast will be deposited in the center of the track.

There are two methods of regulating the flow out of the car: (1) By means of an adjustable chain around the ballast door and the cross member of the car frame; and (2) where there is no cross member a strut, sometimes called a jack, is used to regulate the opening of the ballast door.

It usually requires a foreman and six laborers to perform the unload-

ing process with the use of pans. If it is desired to shut off the flow of ballast on a particular stretch of track it can be done by ramming a ballast fork between the door opening and the pan.

The greatest advantage of unloading commercial hopper-type ballast cars with pans is that one is able to place the ballast outside of the rails in limited amounts.

There are, of course, times when larger quantities of ballast for heavy raises are desired and in such cases pans do not allow sufficient ballast to be distributed.

Controls Doors With Chain

By W. H. Colson
General Roadmaster, Atlantic Coast Line, Waycross, Ga.

When we unload ballast from commercial hopper-style gondola cars we control the flow of ballast, for a 6 or 7-in pull, with a ⅜-in ballast chain. This chain is run through the hole in the latch of the hopper-car door and through another hole which is located in the part of the latch fastened to the hopper of the car and is then tied in a single knot. The door is then "knocked open" with a spike maul or hammer of another type. If the length of chain holding the car door does not allow enough ballast to flow, the man holding the chain shakes it with his hand. This causes the chain to slip and the slack allows the door to open wider. Sufficient ballast for a 6 or 7-in pull is then spread over 2½ to 3 rail lengths, with enough left over to dress out the track. When backfilling behind the surfacing the same procedure is followed to control the flow of ballast.

In instances where the center of the track is already full of ballast to the top of the ties, and additional ballast is needed on the ballast shoulder, we use ballast pans for unloading. These pans are fastened underneath the ballast cars and the ballast is diverted onto the heads of the ties. This results in a considerable saving in the amount of labor required for dressing the track. The ballast pans are fastened underneath the ballast-car door with a ⅜-in chain. The pans are approximately 9 in wide and this keeps the door from opening more than 9 in, thereby governing the flow of ballast.

We do not use jacks to control the flow of ballast from hopper cars. In my experience jacks are difficult to handle and have a tendency to fall out while the car is in motion. This could result in derailment of the car. Some types of commercial ballast cars are not equipped with latches with holes. When unloading these cars the ballast chain is tied to the center of the door under the car and in a single knot to the step of the car. The same control of the flow of ballast is secured as when the short chain is tied as described above.

Disposing of Chromate Wastes

What is the most economical method of disposing of the chromate wastes from diesel-engine water-cooling systems? Explain.

Salvage Chromate-Treated Water

By E. R. Glover
Technical Director, Railroad Department, Dearborn Chemical Company, Chicago

The disposal of chromate-treated water is most economically accomplished by reclaiming it for reuse. This involves equipping diesel shops with facilities for collecting the cooling water as it is drained from engines, facilities to upgrade the treated cooling water to meet established standards, and facilities for filling the cooling systems with the reclaimed water.

Certainly this method of reclamation and reuse involves expenditure for facilities that are not required if the chromate-treated cooling water is simply drained from engines into the enginehouse pits and allowed to waste to the sewer. But it has the advantage of salvaging the value of the chromate residual in the drained water, thereby effecting a saving in the cost of cooling water treatment. If disposal of chromate-waste water becomes a necessity, the facilities required to collect the water for reuse are no more expensive than the facilities required to direct the waste water to a suitable treating plant where the chromate would be removed and the chromate-free water then discharged into the sewer. Therefore, since expenditure for facilities to collect the waste water must be made, whether the chromate-treated water is reclaimed or treated to remove the chromate, the relative cost of reclaiming the chromate-treated water or treating it to remove the chromate will govern the decision.

The chromate-treated water removed from the cooling system at the time when draining is required may be in perfect condition for reuse. On the other hand, it may be contaminated with lubricating oil and exhaust-gas products. It may be more economical to provide separate storage facilities for drained cooling water, one tank for that which needs no treatment for immediate reuse and another tank for contaminated water. Such a plan reduces the volume and cost of treatment necessary to restore the water to acceptable quality.

Facilities for treating the contaminated cooling water are required for the purpose of removing sludge, oil and suspended matter. The size of the facilities will be determined by the volume of water to be treated. The most elaborate treatment would consist of settling, coagulation by addition of ferric sulfate or copperas, and filtration. A simpler method of breaking the oil emulsion by acidifying, skimming off the separated oil containing some of the suspended matter, correcting pH and filtering might be found satisfactory. In either case the filtered effluent could be brought up to recommended chromate strength and stored for reuse.

Treatment facilities to remove the chromate, leaving an acceptable effluent for discharge to sewers, requires chemical reduction with ferrous sulfate, addition of lime to neutralize, resulting in coagulation of iron and chromium salts. After settling, the effluent should be free of chromate, oil, and suspended matter.

It is obvious that treatment to remove chromate is more involved and will require more extensive facilities than will treatment to make the cooling water suitable for reuse. Disposal of the coagulated iron and chromium salts might still present a problem at many locations, whereas by reclamation the chromate is returned to the diesel-engine cooling system as an effective corrosion inhibitor.

Local Conditions Govern

By I. C. Brown

Water Engineer, St. Louis-San Francisco, Springfield, Mo.

Choice of method for the disposal of chromate wastes from diesel-engine cooling systems depends largely on the degree of contamination which can be tolerated.

If simple dilution by general waste water is inadequate it may be necessary to isolate the chromate wastes and install elaborate treating equipment to accomplish the chromate removal required to satisfy local conditions.

For obvious reasons many railroads have discontinued the use of chromate-type diesel-cooling-water treatments thereby eliminating the serious chromate waste disposal problem.

Do Diesels Affect Bridge Maintenance?

To what extent, if any, has the introduction of diesel locomotives affected the cost of maintaining bridges? Explain.

Produce Maintenance Savings

By J. S. Hancock

Bridge Engineer, Detroit, Toledo & Ironton, Dearborn, Mich.

The changeover from steam to diesel operation came so quickly that it was a distinct shock to see up-to-date water, coal, cinder, sand and many shop facilities for steam operation become obsolete almost overnight. Fortunately, the railroad bridge is one major item of construction that the diesel has not made obsolete.

The advent of the diesel has given additional life and safety to older bridge structures that were overloaded by steam power to the extent that they would have had to be strengthened or entirely replaced for safe operation.

While the total weight of multiple-unit diesel power might approximate that of the heaviest steam power, diesel weight is spread over a longer length, making the load per lineal foot of diesel on the structure much less than the load per lineal foot of the equivalent steam power. Also, the impact stresses in the structure created by the unbalanced weights in the driving wheels of steam locomotives, designated as "hammer-blow effect," is eliminated by the use of diesel power.

I believe that this reduction in weight and decrease in impact stress are most important factors in favor of bridge maintenance due to diesel operation.

Of minor importance would be the reduction of the threat of fire to timber structures. The "sandblast" action of the steam locomotive that quickly deteriorated the steel and concrete bridge members of overhead bridges and truss spans is also eliminated by the diesel. This permits existing smoke plates to be removed, thus giving additional vertical clearance for high loads.

Diesels have not been in operation long enough so that all of the advantages or disadvantages due to their use can be determined. Neither do we know what the future developments of the diesel will bring forth. However, in so far as present diesel operations are concerned, their use has brought about a decided over-all saving in the cost of maintaining bridges.

Maintenance Cost Reduced

By A. R. Harris

Engineer of Bridges, Chicago & North Western, Chicago

It probably is not feasible to determine, at this time, the extent to which the use of diesel locomotives has affected the cost of maintaining bridges, but there is evidence to indicate that maintenance costs are being reduced on account of the following factors:

(1) Decreased corrosion of bracing systems of through steel bridges and overhead bridges, as blast from steam locomotives is much more destructive than the fumes from diesel locomotives.

(2) Decreased corrosion and wear under the ties on metal stringers and decreased corrosion on metal floor plates of closed-deck non-ballasted bridges on account of the elimination of cinders.

(3) Less tightening of bolts in bracing and less shimming of caps on piles of timber trestles on account of less roll and slide movement of diesel locomotives.

(4) Diesel locomotives do not stress ties, stringers and caps of timber trestles as highly as steam locomotives with the same axle loads, due to absence of hammer-blow effect, which should result in longer life for treated timber trestles.

Trend Toward Lower Maintenance

By W. E. Dowling

Bridge Inspector, Union Pacific, Omaha, Neb.

The Union Pacific is using diesel locomotives throughout the system, but it has been only within the last few years that specific areas have been operated entirely or predominantly with diesel power. Therefore my views on the subject are not a result of a reliable comparison of maintenance or of other significant data, they are merely based on trends which appear to have developed.

I am certain that the dynamic effects or total impact produced by steam locomotives is considerably greater than those produced by diesels, especially on the floor and bracing systems. Total impact generally is considered to be a combination of speed, roll, track and hammer-blow effects, and it is the lack of hammer-blow, or periodic load due to the centrifugal force of unbalanced weights on the drivers of steam locomotives, that seems to make the difference.

Vertical vibrations of steel members produced by the passage of diesels are undoubtedly caused by wheel and track irregularities and are not nearly as great as the vertical vibrations due to the combination of wheel and track irregularities and hammer-blow from the passage of steam power. It is my opinion, and inconclusive trends so indicate, that we will have fewer fatigue failures in the members of

floor and bracing systems and in connections with diesel power than we have had with steam. This may prove to be "wishful thinking."

The hazard of fires on open decks involving the concentration of high temperature in a limited area and originating from fusees, brake-shoe slivers, oil droppings, etc., appears to have increased with diesel operation. There has been considerable discussion regarding this, but whatever the reason or reasons, this trend will be eliminated and should be considered temporary.

Only a small amount of data has been accumulated so far, but results indicate that bridge ties are not withstanding mechanical wear as well as they should under diesel loads. The magnitude and eccentricity of tie-plate loads under diesel operation are giving trouble, both with gage and depth of tie penetration. This also will be remedied and can be considered temporary.

I feel that with complete diesel operation, bridge decks will last longer, fire hazards will be less and we will have fewer repairs and replacements of steel members and connections, but it will be several years before this opinion can be substantiated on our railroad.

Substantial Stress Reduction

By E. J. Ruble

Research Engineer Structures, Association of American Railroads, Chicago

The replacement of steam with diesel locomotives has, in general, reduced the maintenance on steel and timber bridges. However, this reduction does not apply to all maintenance items as several have undoubtedly been increased with the use of diesel power. It appears reasonable to expect about the same amount of maintenance on a concrete bridge under diesel operation as that which obtained under steam power because the principal problem in maintaining these structures is a result of poor construction details and deterioration.

The calculated bending moments and stresses, including impact, under road passenger or freight diesels varies from about 42 per cent of those calculated under a Cooper E72 steam locomotive with impact for a 15-ft span to about 60 per cent for a 400-ft span, and the field investigation conducted by the research staff of the AAR with electrical strain-gage equipment has indicated that these percentages are about correct. Since the fatigue life of steel and timber bridges is directly related to the magnitude of the stresses, we can expect less maintenance and longer life under diesel operation. A study of the oscillograms secured during the field tests clearly indicates that the vibrations induced in the bridges under diesel locomotives operating at high speeds are considerably lower than those under steam power. This is in line with the reaction of an individual obtained when standing under or on a bridge during the passage of these two types of power.

Field tests have indicated that the forces produced in the bracing systems of bridges resulting from the spring-borne weight of the locomotive oscillating about a longitudinal axis, and the lateral thrusts of the wheels on the rail resulting from the swaying action, are smaller for the diesel than for steam locomotives. This reduction in forces, especially in rolling, has reduced the number of loose rivets and cracked stiffener angles in bracing cross frames, which are due principally to unequal deflection of the girders.

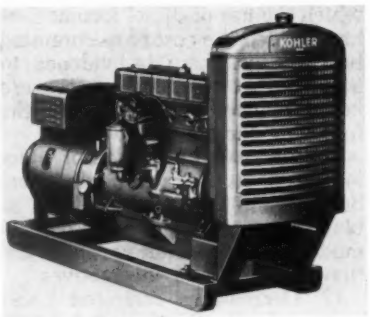
The smaller deflections occurring in the bridges under diesel power has reduced the maintenance on end bearings, especially those of the flat bearing type used in older bridges where most of the load is carried by the inside edge of the steel masonry plate, thus causing them to wear into the masonry.

Bridges, signal towers and other structures over railroad tracks are subjected to much damage from blasts and fumes with corresponding high maintenance costs. The change to diesel power has lessened the maintenance due to blasts, but the corrosive effects have not decreased. Diesel exhausts may be more corrosive than steam-power exhausts depending upon the sulfur content of the fuel oil. The use of blast plates provide very little protection against exhaust fumes since the gases will flow around the plates and their corrosive attack on the steel is high when the surface is wet.

The maintenance costs of treated timber trestles due to fires appear to have increased with the replacement of steam with diesel locomotives. The most logical explanation of this increase is that the number of cars now being hauled by the diesel locomotives and their operating speeds are considerably higher than under steam operation. This increase in number of cars and high speed necessitates greater braking effort to hold the train within speed restrictions, with the result that the decks of the bridges are subjected to a greater number of hot brake-shoe slivers.

PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices



ELECTRIC PLANT

A NEW 15-kw gasoline-powered ac electric plant has been announced by the Kohler Company, Kohler, Wis. Available in six different models with remote-control or standby starting and with varying voltage outputs, the new plant is water cooled with a large radiator, belt-driven centrifugal pump and blower fan.

The six-cylinder engine produces 51 hp at 1800 rpm and has a 3½-in bore and 3¾-in stroke. It features an adjustable jet carburetor with automatic choke and a mechanical fuel pump with oil bath air filter. A carburetor and valve kit for converting the fuel supply to natural or artificial gas is available. Intake valves are of chrome nickel, exhaust valves of chrome-silicon and pistons of an aluminum alloy. There is a forged-steel crankshaft with three main bearings. Lubrication is a combination of pressure feed, metered intermittent jet and spray.

Remote starting of the new Kohler plant is accomplished through an on-off switch on the plant or by a two-wire remote control. Stand-by

starting, which automatically starts the plant and transfers the load whenever regular service fails, is through an emergency transfer panel with a 75-amp built-in transfer switch.

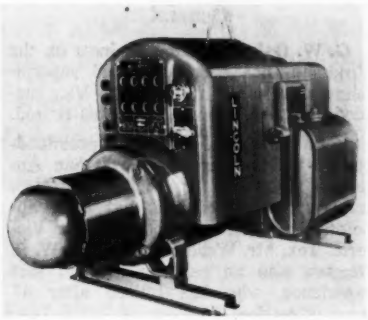
TRANSIT CRANE

A MOBILE crane-excavator with a 15-ton rated lifting capacity is now being offered by the Bucyrus-Erie Company, South Milwaukee, Wis. Designated the 15-B Transit Crane, the machine is designed to handle many types of work considered too small or restricted for profitable large machine operation.

Wheel mounting for the unit is manufactured for Bucyrus-Erie by White-Sterling and is built especially for crane-excavator service. The mounting is powered by a 138-hp White gasoline engine, equipped with single wheels in front and tandem duals in the rear with a 170-in wheelbase. A heavy-duty 5-speed transmission and 2-speed auxiliary unit combine to provide 10 forward speeds to a maximum of 31 mph and two reverse speeds.

The standard crane boom is 30 ft long, extendible to 70 ft by using removable inserts. A telescopic tubular boom has been installed to increase safety in operation. Boom suspension is of the pendant type with an 8-part operating line between the A-frame and bridle. Special 16-part suspension with pendants for booms 40 ft and longer is available as extra equipment. Ten-foot jibs, which may be increased to 20 or 30 ft by adding inserts, are also available. Booms 60 ft and longer with either 8 or 16-part suspension can be equipped with special folding equipment for job-to-job moves.

The 15-B is convertible to 2¼-yd shovel, dragshovel, clamshell and dragline front ends. The standard boom for clamshell and dragline work is 30 ft long, extendible to 45 ft through use of insert sections. Clamshell equipment includes a Rud-O-Matic tagline on the boom. Dragline equipment includes a swinging-type fairlead on a revolving frame.



COMBINATION WELDER AND POWER UNIT

A COMBINATION machine, which is designed for use as a 200-amp welder or a 4-kva continuous auxiliary power unit, has been announced by the Lincoln Electric Company, Cleveland, Ohio. Known as the Weldanpower, the machine can also be used for intermittent standby power at a rating of 5 kva.

The unit is an ac alternator powered by a 12-hp air-cooled gasoline engine. The alternator is constructed with a four-pole, laminated-steel rotor and a stator consisting of two separate windings, one for the welding circuit and one for the power supply so that both power sources are available simultaneously. A separate field exciter, with two compound windings on a third series field winding, provides for accurate voltage control regardless of load variations. For welding, the operating panel provides taps which supply ac current for use with electrodes ranging from 5/64 in to 5/16 in in diameter.

A continuous current range from 20 to 200 amp is provided by a heat-control mechanism which is used to raise or lower the current from any one tap to suit exact requirements of the welding job. For auxiliary power, the panel provides a 230-volt outlet accommodating a standard 3-prong plug and four outlets for 115-volt power accommodating standard 2-prong flat-blade plugs.

NEW EUCLID 300-hp, 18-cu yd, S-18 scraper unit.

NEW SCRAPER UNITS

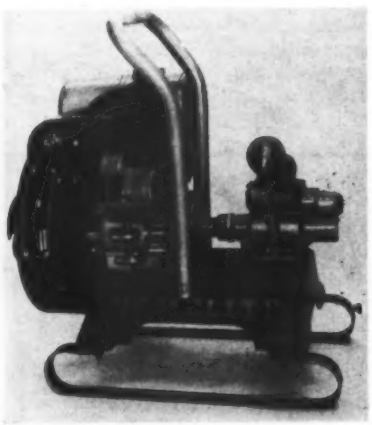
THREE NEW rubber-tired scrapers with overhung engine tractor units and capacities ranging from 7 cu yd to 18 cu yd have been announced by the Euclid Division of General Motors Corporation, Cleveland, Ohio.

The smallest of the three units, known as the S-7 and designed for the small self-propelled scraper market, is powered by a 138-hp GM diesel engine. The unit is equipped with 18:00 by 25 tires, and full 90-deg hydraulic steering enables it to make non-stop turns in 26 ft. Other features include a 5-speed transmission, three independently-operated hydraulic scraper controls and a 4-section interchangeable, reversible cutting edge. Planetary gears are at the outside of the drive wheels and all intermediate drive components are readily accessible.

A second scraper unit, designated the S-18, has an 18 cu yd capacity. A 300-hp GM engine, series 6-110,

is used in conjunction with an Allison Torqmatic converter and transmission which enables the operator to shift under full power at all times without clutching. The drive unit automatically matches horsepower to hauling conditions.

As a further development in the large scraper field, Euclid has developed an 18 cu yd Twin Power Scraper, known as the TS-18. The machine features two 190-hp GM diesel engines, one in the tractor and the other located behind the scraper bowl to furnish power to the rear wheel. Other equipment includes Allison Torqmatic converters and transmissions which supply power to all four drive wheels. No-spin differentials are used on both the scraper and tractor drive axles. All scraper operations are hydraulically controlled, independently of each other, and full 90-deg hydraulic steering allows the large unit to make 180-deg turns in 35 ft.



PRESSURE PUMP FOR FIRE PROTECTION

THE HOMELITE Corporation, Port Chester, N.Y., has announced a new lightweight, positive-displacement pressure pump for fire protection in railroad service. The new pump, called the Model 5P, operates at pressure from 250 to 300 psi.

Weighing only 29 lb, the pump features automatic priming and an automatic by-pass adjustable over the complete range of the pump. Capacity is 12 gpm at open discharge, 11 gpm at 250-lb pressure, and 10 gpm at 300-lb pressure. Shut-off pressure is at 320 psi. Powered by a Homelite single-cylinder air-cooled, two-cycle gasoline engine, the 5P pump is rated 4.5 hp at 4750 rpm.

THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

G. W. Oxley, assistant engineer on the Virginian, has been appointed superintendent of safety at Roanoke, Va., succeeding **C. W. Dowdy,** who was retired.

J. E. Weatherly, assistant superintendent on the Southern Pacific at San Antonio, Tex., and an engineer through training and experience, has been appointed division superintendent at Victoria, Tex. Mr. Weatherly succeeds **W. S. Higgins,** also an engineer through past experience, who has retired after 47 years of service.

P. G. Shepherd, assistant general superintendent on the Chesapeake & Ohio, and an engineer through training and past experience, has been appointed assistant to general manager at Richmond, Va.

Mr. Shepherd began service with the C&O as a rodman at Logan, W. Va., in October, 1918. After serving as draftsman and instrumentman at various points on the system, he was appointed assistant engineer in the maintenance-of-way department in 1936. He became assistant cost engineer at Huntington, W. Va., in January, 1939. In August 1941 he was appointed transportation inspector at Huntington, later advancing to various positions in the operating department before being named general superintendent.

R. G. McGehee, general superintendent on the Chesapeake & Ohio at Clifton Forge, Va. and an engineer through training and experience, has been named assistant to vice-president—operation, with headquarters at Richmond, Va.

Mr. McGehee began his career with the C&O as a rodman in the engineering department at Clifton Forge in August, 1920. He became a material accountant in the engineering department at Russell, Ky., in October 1923, and held that position until January 1926 when he was made assistant cost engineer at Clifton Forge. In August 1927 he was appointed assistant division engineer at that same point. He served in this capacity until March 1939 when he was named trainmaster at Clifton Forge, later serving as superintendent, until being appointed general superintendent in November 1951.

Engineering

Harry Leard, engineer maintenance of way on the Virginian at Norfolk, Va., has been appointed to the dual position of engineer maintenance of way—assistant chief engineer at that same point, succeeding **H. G. Adams,** who was retired.

John Stang, supervisor of track on the New York Central, has been promoted to assistant division engineer on the Ohio Central division, with headquarters at Columbus, Ohio, succeeding **S. H. Fredericks,** transferred.

R. W. Scott, office engineer on the Burlington at Lincoln, Neb., has been named assistant chief engineer, Lines West, at that same point, succeeding **C. C. Robnett,** who was retired. **E. A. Graham,** succeeds Mr. Scott as office engineer and chief clerk.

John F. Newsom, Jr., assistant engineer on the Norfolk & Western at Norfolk, Va., has been named real estate agent at Roanoke, Va., succeeding the late **W. B. Friend.** Mr. Newsom will be succeeded at Norfolk by **Lucian A. Durham, Jr.,** assistant engineer of buildings, and **Preston P. Dunavant, Jr.,** draftsman, will replace Mr. Durham as assistant engineer buildings.

D. C. Charlebois, Jr., roadmaster on the Western Pacific, has been promoted to assistant division engineer on the Western division, with headquarters at Sacramento, Calif., succeeding **Gordon Switzer,** whose promotion to general supervisor of structures and work equipment is noted elsewhere in these columns.

E. C. Hoyer, Jr., engineer of buildings on the Chesapeake & Ohio, Southern Region, has been named staff engineer with headquarters as before at Richmond, Va. **E. W. Niblet,** assistant engineer of buildings, succeeds Mr. Hoyer, and **H. T. Seal** replaces Mr. Niblet.

A. J. Wilson, who has been named assistant to chief engineer on the Union Railroad at East Pittsburgh, Pa. (RT&S, Dec., p. 58), was born at Charleroi, Pa., February 26, 1893.

He began railroad service with the Union in June 1915 as a draftsman. Between 1917 and 1919 he saw service with the U. S. Army in Europe, and following his release from service he returned to the Union as a master carpenter at Bessemer, Pa. In 1940 he was appointed supervisor of general maintenance at that

(*Continued on page 66*)

Railway Personnel (Cont'd.)

same point, and in 1942 was named general maintenance engineer, Duquesne, Pa. Mr. Wilson was promoted to engineer structures at East Pittsburgh, in 1948, which position he held until his recent promotion.

L. A. Pelton, whose appointment as assistant division engineer on the Pennsylvania at Columbus, Ohio, was announced recently (RT&S, Dec., p. 56), was born at St. Paul, Minn., September 14, 1918. He attended the University of Minnesota where he received a civil engineering degree in 1940 and began his railroad service with the PRR as an engineering apprentice at Crestline, Ohio, October 6, 1941. He was promoted to assistant on the engineering corps in January 1942, serving in this capacity until January 1943 when he entered the U. S. Navy. He returned to the Pennsy in March 1946 as an assistant on the engineering corps at Piqua, Ohio. He was named assistant supervisor track at York, Pa., in July 1946, later serving in this same capacity at Carnegie, Pa. In January 1948 he was advanced to supervisor track at Logansport, Ind., subsequently serving in this capacity at Ernest, Pa., Philadelphia, Terre Haute, Ind., and New York City.

Frank Aikman, Jr., engineer maintenance of way on the Long Island, has been named chief engineer at Jamaica, N. Y., succeeding **J. M. Nicholson,** who has retired. In a consolidation move uniting the road's construction and maintenance departments, **John Solarski,** engineer of construction, has been named assistant chief engineer, and **W. A. Thomson,** track supervisor, has been promoted to engineer of track. **Harold Raver,** engineer of structures, has been appointed engineer in charge of bridges and buildings, and **Donald Dana,** field engineer, has become assistant engineer in charge of field forces.

Frank Aikman, Jr.

A native of Brooklyn, N. Y., Mr. Aikman is a graduate of Lafayette University. He began his railroad service in 1934 as an engineer apprentice on the Pennsylvania, later becoming an assistant in the engineering corps and a track su-

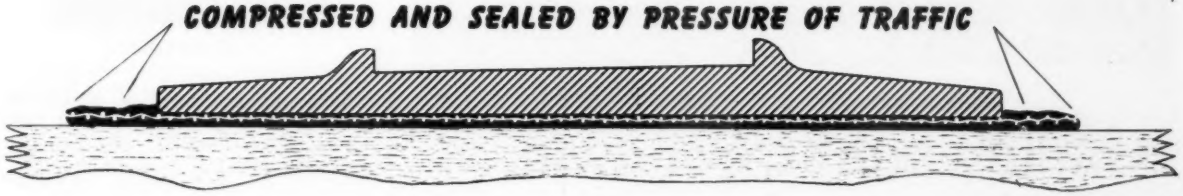
(*Continued on page* 68)

Now . . . SELF SEALING

the New ZONER*

TIE SHIELD

COMPRESSED AND SEALED BY PRESSURE OF TRAFFIC



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The new self sealing ZONER Tie Shield offers outstanding advantages and improvements. It requires no separate sealing material; the pressure of traffic quickly forms a tight, weatherproof seal between tie shield and cross-tie. The ZONER is constructed of a scientifically blended asphalt and asbestos between tie shield and tie . . . metallic grid on upper surface provides metal-to-metal contact between tie plate and tie shield, virtually impervious to water and abrasive substances.

Controlled tests, equivalent to an extended 1″ rainfall, indicate that 41% of the water ordinarily seeps through unprotected tie plates (through spike holes and around edges) causing accelerated tie deterioration. The same tests prove that the ZONER prevents any part measurable of this water from seeping under the shield.

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The Libbey-ZONE Process protects top surfaces of bridges against fires caused by fusees, burning oil, careless smokers, etc. This process now adopted as standard by many major roads on entire system. Write for information.

For a sample of ZONER Tie Shield and other pertinent information, write today to:

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Railway Department **Box 789** **Fort Worth 1, Texas**

Railway Personnel (Cont'd.)

pervisor. In June 1949 he became engineer maintenance of way.

Mr. Nicholson was born in 1881 and attended the College of St. Francis Xavier and Columbia University where he received a degree in civil engineering.

J. M. Nicholson

Following graduation he joined the Long Island as a draftsman and later worked as a civil engineer until becoming assistant engineer in 1928. In November 1929 he was named assistant to the chief engineer and in 1949 was advanced to assistant chief engineer. He was promoted to chief engineer in January 1953.

Paul A. Perkins, whose promotion to assistant division engineer on the Southern at Princeton, Ind., was announced recently (RT&S, Dec., p. 56), was born at Barber, N. C., April 19, 1919. He attended Glen Alpine high school, and began his railroad service on the Southern in February 1936. Beginning as a section laborer at Bryson City, N. C., he was advanced to assistant foreman and relief foreman at Rockmart, Ga., in June 1937. In March 1943 he entered the U. S. Army Corp of Engineers and served until October 1945 when he returned to the Southern as a section foreman at Braswell, Ga. He later served in this same capacity at Seney, Ga., until being appointed assistant supervisor at Athens, Tenn., in January 1950. He was promoted to supervisor at Sylva, N. C., in February 1950, subsequently being transferred to Cordele, Ga., in the same capacity.

C. W. Gabrio, bridge engineer of the Virginian, has been appointed to the newly created position of engineer of structures, with headquarters as before at Norfolk, Va. The position of bridge engineer has been abolished.

R. H. Carpenter, whose promotion to district engineer on the Southern district of the Missouri Pacific at Little Rock, Ark. was announced recently (RT&S, Dec., p. 66), was born at Coffeyville, Kan., June 9, 1897. He attended the University of Kansas from 1914 until his entrance into the U. S. Army in 1917. Following discharge from the military service in 1919 he entered railroad service

as a rodman on the Mo Pac at Coffeyville. He later served as instrumentman and draftsman until being promoted to assistant engineer in January 1929. After working on various divisions, he was named resident engineer in December 1939 and served in this capacity on several construction projects. In March 1944 he was promoted to assistant division

R. H. Carpenter

engineer on the Kansas City Terminal division, and was advanced to division engineer on the Missouri division in June 1948. He was appointed engineer of design in March 1951, which position he held until his promotion.

David V. Messman, who has been appointed engineer of bridges on the Southern, at Knoxville, Tenn. (RT&S, Dec., p. 60), was born November 27, 1908, at Dakota, Ill., and attended Cornell College (Iowa) where he received an AB degree in 1932, and the University of Wisconsin, where he received a BS degree in civil engineering in 1943. He began his railroad career with the Southern as an assistant engineer at Hartsville, Tenn., in January 1936. He later served in the same capacity at Charlotte, N. C., until joining the U. S. Army Corps of Engi-

David V. Messman

neers in May 1942. Following discharge from the military service in March 1946 he returned to the Southern as assistant engineer of bridges at Knoxville, serving in this capacity until his recent promotion.

Raymond Dejaiffe, engineer maintenance of way on the Toledo Terminal, Toledo, Ohio, has been appointed chief engineer. The position of engineer maintenance of way has been abolished.

M. C. Wolf, who has been named valuation engineer on the Northern Pacific at St. Paul, Minn. (RT&S, Dec., p. 56), was born at Milwaukee, Wis., March 14, 1904. He attended the University of Minnesota where he received a BS degree in civil engineering in 1925. Mr. Wolf began his railroad service with the NP as a draftsman in September 1925. Since that time he has occupied various positions in the engineering department.

C. B. Bronson, assistant chief engineer maintenance of way on the New York Central System at New York, retired December 31 after more than 41 years service.

Mr. Bronson was born January 30, 1889, at Akron, Ohio, and received his higher education from the Illinois Institute of Technology. He entered the service of the New York Central in June 1913 as assistant to consulting engineer on rails, ties and structural steel, and in August 1924 was appointed assistant inspecting engineer. He was promoted to inspecting engineer in 1934, and in August 1948 was named assistant engineer maintenance of way. He was promoted to maintenance of way assistant to the vice-president, operation and maintenance, on January 1, 1949. In February 1953 he was advanced to assistant chief engineer maintenance of way.

C. B. Bronson

Track

H. D. Huffman has been named roadmaster on the Rock Island at Eldon, Iowa, succeeding **W. F. March,** who has retired.

Joe Teunas, assistant roadmaster on the Chicago & North Western, has been promoted to roadmaster at Fremont, Neb., succeeding **W. H. Wagner,** who has retired. **E. L. Barnes,** assistant roadmaster, has been promoted to roadmaster at Eagle Grove, Iowa, replacing **B. F. Hagar,** also retired. **M. J. Kucera,** track supervisor, has been advanced to assistant roadmaster at Jefferson Park, Ill., to replace Mr. Teunas. **Edward Grall,** sec-

(*Continued on page* 72)

Railway Personnel (Cont'd.)

tion foreman, has been advanced to assistant roadmaster at Chicago.

J. F. Christian, student supervisor on the Frisco, has been appointed assistant roadmaster on the Eastern division, east and west, with headquarters at Springfield, Mo. **L. F. Woodlock,** student supervisor, has been appointed assistant roadmaster at Oklahoma City, Okla.

Farris Shackelford, assistant track supervisor on the Southern at East St. Louis, Ill., has been promoted to track supervisor at that same point. **G. G. Floyd** has been advanced to assistant track supervisor, succeeding Mr. Shackelford.

Ray Hobbs has been appointed temporary roadmaster on the Eastern division of the Western Pacific, with headquarters at Elko, Nev., succeeding **D. C. Charlebois, Jr.,** whose promotion to assistant division engineer is noted elsewhere in these columns. **Walter L. Chapman** has been appointed roadmaster on the fourth district of the Western division, and **Virgil D. Kerns,** has been named assistant roadmaster on the Third district of the Western division. **M. K. Anderson** and **J. H. Jones** have been appointed assistant roadmasters of the First district, Western division, and Third district, Eastern division, respectively.

Earl H. Weiszbrod has been appointed acting roadmaster on the Santa Fe with headquarters at Belen, N. M., succeeding **W. H. Clark** who has been promoted.

Bridge and Building

J. D. Martin, assistant chief carpenter on the Milwaukee at Tacoma, Wash., has been promoted to chief carpenter at Butte, Mont., succeeding **W. E. McFadden.** Mr. McFadden has been transferred to Chicago, replacing **Leo J. Denz,** who has retired.

Gordon Switzer, assistant division engineer on the Western division of the Western Pacific, has been named general supervisor of structures and work equipment, succeeding **N. A. McPherson,** who has retired.

J. H. Buchanan, bridge and building foreman on the Canadian Pacific at Regina, Sask., has been promoted to bridge and building master at Edmonton, Alta., succeeding **J. G. McKie,** who has been transferred to Moose Jaw, Sask. Mr. McKie succeeds **F. W. Welbourn,** who was retired.

Mr. Buchanan began his service with the CPR as a bridgeman at Regina in 1920. He was promoted to bridge and building foreman in 1938.

E. W. Prentiss, who has been named engineer of bridges and buildings on the Pennsylvania at Chicago (RT&S, Dec., p. 60), was born at Geneva, Ill. He is a graduate of the Illinois Institute of Technology (1923) and entered railroad service with the PRR in 1929. Beginning as a draftsman as Chicago, he was advanced

E. W. Prentiss

to designing engineer in 1938 and assistant engineer of bridges and buildings in January 1942, all at Chicago.

Obituary

Harold L. Pitner, who retired recently as assistant engineer on the Milwaukee at Chicago (RT&S, Oct., p. 76), died December 2, at Chicago.

H. M. Noel, retired construction roadmaster on the Missouri Pacific, died recently at the age of 66.

E. M. Hastings, retired chief engineer on the Richmond, Fredericksburg & Potomac, died on November 21.

Mr. Hastings was born at Lutherville, Md., May 5, 1882, and attended the Baltimore (Md.) public schools, Baltimore City College, Baltimore Polytechnic Institute and Virginia Military Institute (honorary alumnus). He entered railroad service with the B&O in 1899 on summer

E. M. Hastings

work surveys, and subsequently served as rodman and instrumentman. Mr. Hastings joined the RF&P in December 1903, and served as instrumentman and inspector on location and construction until 1906 when he was appointed resident en-

(*Continued on page* 74)

Railway Personnel (Cont'd.)

gineer. He served in this capacity until 1920 when he was named principal assistant engineer, becoming chief engineer of the road in 1922. Mr. Hastings was a past president of the American Railway Engineering Association.

Association News

Maintenance of Way Club of Chicago

January 24 will be the date of the next meeting of this club. The meeting will be held at the new headquarters, the Hamilton Hotel, 20 S. Dearborn street, Chicago. This meeting will be addressed by G. M. Magee, director of engineering research, Association of American Railroads, whose subject will be "AAR Research on Bolt-Hole Failures and the Mechanical Wear of Ties."

American Railway Engineering Association

Five committees have scheduled meetings to be held during the month of January and early February. These are: Masonry—Roosevelt Hotel, New Orleans, February 3 and 4; Records and Accounts—Netherland Plaza Hotel, Cincinnati, Ohio, January 18 and 19; Yards and Terminals—Nashville, Tenn., January 17 and 18; Economics of Railway Labor—International House, New Orleans, January 14; Waterways and Harbors—Association Headquarters, Chicago, January 11.

Seven new committee chairmen and eight new committee vice-chairmen will take over direction of their respective committees effective with the close of the 1955 annual meeting. The committees and their new chairmen and vice chairmen are as follows:

Roadway and Ballast—A. P. Crosley, engineer maintenance of way, Reading Company, Philadelphia, Pa., vice-chairman.

Ties—L. C. Collister, superintendent treating plant, Atchison, Topeka & Santa Fe, Albuquerque, N.M., chairman, and L. P. Drew, assistant chief engineer, Union Pacific, Omaha, Neb., vice-chairman.

Rail—B. R. Meyers, chief engineer, Chicago & North Western, Chicago, chairman, and L. S. Crane, engineer of tests, Southern, Alexandria, Va., vice-chairman.

Masonry—M. S. Norris, regional engineer, Baltimore & Ohio, Pittsburgh, Pa., chairman, and E. A. McLeod, district engineer of structures, New York Central, Detroit, Mich., vice-chairman.

Contract Forms—W. D. Kirkpatrick, assistant to chief engineer system, Missouri Pacific, St. Louis, Mo., chairman,

(*Continued on page* 76)

Association News (Cont'd.)

and E. M. Hastings, Jr., wiring crossing engineer, Chesapeake & Ohio, Richmond, Va., vice-chairman.

Economics of Railway Labor—D. E. Rudisill, chief engineer maintenance of way, Western Region, Pennsylvania, Chicago, chairman, and L. A. Loggins, chief engineer, Texas & New Orleans, Houston, Tex., vice-chairman.

Waterways—A. L. Sams, office engineer, Illinois Central, Chicago, chairman, and F. B. Manning, engineer of bridges and structures, Chesapeake & Ohio, Detroit, vice-chairman.

Waterproofing—Henry Seitz, designing engineer of bridges and buildings, Baltimore & Ohio, Baltimore, Md., chairman, and E. A. Johnson, assistant engineer of bridges, Illinois Central, Chicago, vice-chairman.

Northwest Maintenance of Way Club

The next meeting of the club will be held on January 27 at the Midway Civic Club, 1931 University avenue, St. Paul, Minn. The program for this meeting will be provided by the Timber Engineering Company, and the subject will be, "The Application and Uses of Timber on the Railroads." R. L. Fletcher, structural engineer for the Timber Engineering Company, will exhibit a movie entitled "Coming Out of the Woods," and also will give a talk as part of the program.

National Railway Appliances Association

The Board of Directors of the NRAA held a meeting on December 14 to assign space to 101 firms which had applied for 251 booths in the exhibition to be held March 14-17, 1955, at the Coliseum, Chicago. This show will take place concurrently with the annual convention of the American Railway Engineering Association to be held at the Palmer House, Chicago, March 15-17. Participants in the show will include many firms who have not previously shown their materials during the March exhibitions.

Officers of the NRAA state that there is still desirable space available. Interested firms which desire to show new and improved appliances and work equipment for use by the railroads' maintenance-of-way and structures forces should communicate with Lewis Thomas, director of exhibits, 59 East Van Buren street, Chicago 5.

A list of the companies that have requested space follows:

Achuff Railway Supply Company
Air Reduction Sales Company
Allied Chemical & Dye Corp.
American Brake Shoe Company, Ramapo Ajax Div.
American Chemical Paint Company
American Hoist & Derrick Co.
Armco Drainage & Metal Products, Inc.
Austin-Western Company
Baldwin-Lima-Hamilton Corporation Car Dept.—Eddystone Division
Barco Manufacturing Company
Bernuth, Lembcke Co., Inc.
Binks Manufacturing Company
Bird & Son, Inc.
Blaw-Knox Company
R. H. Bogle Company
Briggs & Stratton Corp.
The Buda Company
Bumpers, Inc.
F. Burkart Manufacturing Company
Camef Equipment Corporation
Caterpillar Tractor Company
Chicago Pneumatic Tool Company
Chipman Chemical Company, Inc.
Cullen-Friestedt Company
Dearborn Chemical Company
Eaton Manufacturing Company
Electric Tamper & Equipment Co.
Enterprise Railway Equipment Company
Fabreeka Products Company, Inc.
Fairbanks, Morse & Co.
Fairmont Railway Motors, Inc.
Gary Slag Corporation
Golden Anderson Valve Specialty Company
The Brice Hayes Company
Hayes Track Appliance Company
Homelite Corporation
Hubbard & Co.
Industrial Brownhoist Corporation
Ingersoll-Rand Company
International Harvester Company
Jackson Vibrators, Inc.
Johns-Manville Sales Corporation
O. F. Jordan Company
Kalamazoo Manufacturing Company
Kershaw Manufacturing Company
Keuffel & Esser Co. of New York
Koehring Company
Lee, W. W. & Son
The Lehon Company
LeRoi Company
Letourneau-Westinghouse Company
Linde Air Products Company, Railroad Dept.
The Locomotive Finished Material Company
Maintenance Equipment Company
Mall Tool Company
Massey Concrete Products Company
The Master Builders Company
Matisa Equipment Corporation
Mid-West Forging & Mfg. Co.
Modern Railroads Publishing Company
Morrison Railway Supply Company
Motorola, Inc.
National Aluminate Corporation
The National Lock Washer Company
The Nicholas Engineering Company
Nordberg Manufacturing Company
Northwest Engineering Company
Northwestern Motor Company
Oliver Iron & Steel Corp.
Onan, D. W. & Sons, Inc.
The P. & M. Co.
Permamix Corporation
Pettibone Mulliken Corporation
Pocket List of Railroad Officials
Pullman-Standard Car Manufacturing Company, Track Equipment Dept.
The Q & C Co.
Racine Hydraulics & Machine, Inc.
The Rail Joint Company, Inc.

(*Continued on page* 78)

Organizations

American Railway Bridge and Building Association—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5. Next annual meeting, September 19-21, 1955.

American Railway Engineering Association—Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5. Next annual meeting, March 15, 16 and 17, 1955.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—E. C. Patterson, secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6. Next meeting January 24, Hamilton Hotel.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, Gardner Road, Broadview, Ill.; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Roy M. Edmonds, Secretary-Treasurer, 1221 Locust street, St. Louis 3, Mo. Next annual meeting, October 26-28, Peabody Hotel, Memphis, Tenn.

Roadmasters' and Maintenance of Way Association of America—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5. Next annual meeting, September 19-21, 1955.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

Association News (Cont'd.)

Railroad Rubber Products, Inc.
The Rails Company
Railway Ballast Conditioning Company
Railway Maintenance Corporation
Railway Purchases and Stores
Railway Track-work Company
Reade Manufacturing Company, Inc.
Rust-Oleum Corporation
Schramm, Inc.
Security Locknut Corporation
Simmons-Boardman Publishing Corporation
Sperry Products, Inc.
Sperry Rail Service Division
Teleweld, Inc.
Templeton, Kenly & Co.
Timber Engineering Company
True Temper Corporation
United States Steel Company
The Warner & Swasey Co.,
Gradall Div.
Western Railroad Supply Company
White Manufacturing Company
Wisconsin Motor Corporation
Woodings-Verona Tool Works
Woolery Machine Company

Supply Trade News

General

The business of **Spray Services, Inc.,** Huntington, W. Va., has been acquired by the **National Aluminate Corporation,** Chicago. **John P. Quarles,** formerly president of Spray Services, Inc., has been appointed assistant vice-president of Nalco. Mr. Quarles will retain managership of the newly acquired facility which will be known as the Spray Services Department of Nalco's Railroad Division.

Through this acquisition, Nalco will extend its weed-control service into the South and Southeast. It is also stated that the effect will be to "create a more flexible service schedule for Nalco in its established operations throughout the northern and western regions of the country by increasing the availability of technicians and equipment."

As a result of the new move, Nalco expects to incorporate rail-coating for brine corrosion control and equipment into its overall railroad service. It is pointed out that Spray Services "has achieved notable success in this particular field over the last several years."

Personal

Lawrence E. MacDonald has been appointed general sales manager for the **Bucyrus-Erie Company** at Milwaukee, Wis. He was formerly sales manager, excavator distributors.

John J. Sayles has been appointed field service engineer for the Cleveland area of the Pittsburgh division of **A. M. Byers Company.**

H. H. Humphreys, assistant manager, finance, for the **Koppers Company,** has been promoted to manager, control section, **Wood Preserving Division.** Mr. Humphreys has been with Koppers since May, 1954, when the company acquired the American Lumber & Treating Company of which Mr. Humphreys was secretary.

E. S. McCormick has joined the Koehring Company as sales representative in the railroad field, with headquarters at Chicago. Mr. McCormick had previously been associated with equipment manufacturers, particularly in Chicago and the Midwest area.

E. S. McCormick

D. J. Williams, manager of the Western region of railroad sales for **Air Reduction Sales Company,** has been named manager of the railroad department with headquarters as before at Chicago.

Mr. Williams began service with Air Reduction in 1917 on the Pacific Coast where he progressed through the manufacturing and sales departments to the post of Pacific Coast manager. In 1934 he was appointed western manager of railroad sales. Between 1942 and 1945 he was on active duty with the United States Navy, following which service he returned to his post of western manager of railroad sales for Air Reduction.

D. J. Williams

Don S. Permar, sales manager of stationary air compressors for the **LeRoi Division** of the **Westinghouse Air Brake Company,** has been named to the newly created post of field sales manager at Milwaukee. In his new position, Mr. Permar will have overall responsibilities in managing the LeRoi field sales organization with district sales offices located in New York, Atlanta, Cleveland, Milwaukee, Tulsa and San Francisco.

Don S. Permar

Mr. Permar joined Westinghouse Air Brake as a pneumatic engineer in 1945 following five years in the Air Force. In the fall of 1946, he became a special representative for the Industrial Products division, later being appointed sales manager of stationary air compressors. He attended the Carnegie Institute of Technology.

Manufacturers' Literature

Following is a compilation of free literature, pamphlets and data sheets offered by manufacturers to the railroad industry. Circle the number (s) on the coupon below to receive the desired information; the requests will be sent direct by the manufacturers.

1. TRACK CLEANER. *Pettibone Mulliken Corporation.* 2 special folders available on the PMCO Model 56 Speedloader Trak-Kleener. 4-page folder describes snow removal with this machine. 28-page illustrated action picture brochure (PM 56, TK.950) gives detailed specifications.

2. PUMPS. *Aurora Pump Div. The New York Air Brake Co.* 8-page 2-color catalog describes, illustrates and gives specifications for the wide range of Aurora centrifugal and Apco turbine-type pumps available in a complete range of sizes.

3. SHOVEL HOIST DRIVE. *Harnischfeger Corporation.* 3-color bulletin (X-156), divided into 3 sections, gives complete story of Magnetorque hoist drive for P&H shovels; contains on-the-job photos, cutaway drawings, and a schematic comparison with adjustable voltage systems.

4. HYDRAULIC EQUIPMENT. *Racine Hydraulics & Machinery, Inc.* 20-page 3-color catalog (P-10-F) describes, illustrates and shows typical applications of Racine hydraulic equipment, including pumps, valves, boosters and pumping units.

5. THREADED FASTENERS. *Standard Pressed Steel Co., Unbrako Socket Screw Div.* 32-page catalog (877-4) "Unbrako Standards" describes, illustrates, and gives specifications and typical applications for the complete line of Unbrako precision threaded fasteners.

6. TUNGSTEN. *Sylvania Electric Products, Inc.* 20-page multi-color brochure (NP-243) completely describes and illustrates the manufacture, properties and uses of tungsten, includes very attractive 2-page flow chart showing how tungsten is made and quality-controlled from ore to finished products.

7. HYDRAULIC CRANE. *Austin-Western Co.* 8-page illustrated bulletin (AD-2253) describes the indoor-outdoor hydraulic crane, includes specifications, performance data and a safe load chart.

8. CENTRIFUGAL PUMPS. *Worthington Corp.* 4-page 3-hole punched bulletin (W-395-B2) describes, illustrates, gives specifications, applications and dimensions of the self-priming frame mounted centrifugal pumps.

9. ELECTRIC HOISTS. *R. G. LeTourneau, Inc.* 6-page 2-color folder (618-9-4) "LeTourneau Electric Hoists Built For Big Lifts" illustrates and explains the heavy duty construction and operational features of the line of electric hoists.

10. FLEXIBLE SHAFT MACHINES. *Franklin-Balmar Corp., N. A. Strand Div.* Catalog (C-210) presents tabular data in easy-to-read form on 3 basic types of Strand machines: single speed direct drive, multiple speed countershaft drive, and multiple speed gear-drive Strandflex line.

11. GRAPHITE ELECTRODES. *United Carbon Products Company.* First completely modern catalog of graphite electrodes, contains data and specifications on Spectroscopic Preformed Custom Electrodes, the new Platrode Series, Ultra Pure Graphite Rods and Powders.

12. ELECTRODES. *Metal & Thermit Corporation.* Complete set of catalogs and literature describes the entire line of Murex electrodes for arc welding as well as rods and wire for gas, submerged arc and inert arc; data includes physical properties, chemical analyses, qualifications, procedures, sizes, and general engineering information.

13. BRIDGE RAILINGS. *Reynolds Metals Company.* 52-page manual "Aluminum Bridge Railings" presents a wealth of data on use of aluminum for bridge railings; shows designs which use aluminum most efficiently, includes study of architectural considerations, complete design details, recommendations for joints, endings and post settings, surface treatment and insulation.

14. HOISTS. *Ingersoll-Rand Company.* 44-page 3-color catalog (Form 5300-A) "Air and Electric Hoists For Efficient Lifting, Pulling, Loading, Scraping" describes, illustrates and gives specifications on the full Ingersoll-Rand line of air and electric hoists for handling bulk materials of all types.

15. STEEL BUILDINGS. *Brookville Manufacturing Company.* The story of steel building versatility is told in file folder type bulletin "Brookville 101", describing many uses which pre-engineered steel buildings are finding today—machine shops, manufacturing plants, etc.

16. DIESEL ENGINES. *Caterpiller Tractor Company.* New booklet (D481) "Railroad Diesels" on Caterpiller diesel engines and electric sets includes examples of diverse applications of this equipment in railroading; includes testimonials from railroad users.

17. RUBBER-TIRED TRACTOR. *LeTourneau-Westinghouse Company.* 28-page color folder (54-005-T) describes and illustrates features of the 208 hp rubber-tired Tournatractor "twice as fast on 85% of tractor work"; points out advantages, anti-friction bearings, gear ratios, and versatility.

Reader Service Department **JANUARY, 1955**
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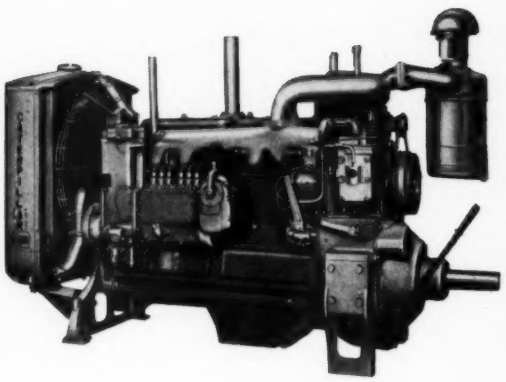

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